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ABSTRACT

This report draws on the Youth in Transition surveys to present educational participation rates for various categories of Australian youth. The focus is on how educational experiences differ among the categories and on the way in which such differences may have changed over time. Chapter 2 describes the way in which educational participation of young people has changed--both in overall level and in the meaning of that participation. Chapter 3 examines these reasons for changes in overall level of educational participation: changes in the youth labor market, government policies, economic restructuring, demographic changes, and views of young people about education. Chapter 4 discusses the meaning of differences in rates of educational participation among young Australians and how these relate to the concept of equity. It is set in the context of a description of the structure of the tables presented in the subsequent chapters and the model that informs the multivariate analyses presented in those tables. Chapters 5-11 present and discuss the differences in educational participation among categories of a number of characteristics of young people and the way in which these differences have changed during the 1980s and 1990s. The characteristics are gender, socioeconomic status, country of birth, rural-urban location, state of schooling, type of school, and early school achievement. (Appendixes include data and analyses; notes to tables;

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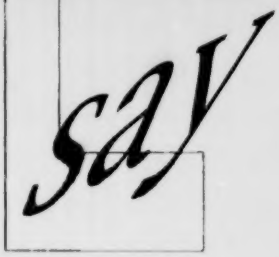

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Research Report Number 13

Participation in Education and Training 1980 - 1994

Michael Long
Peter Carpenter
Martin Hayden

September 1999

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The *Longitudinal Surveys of Australian Youth* (LSAY) study the progress of several cohorts of young Australians between school, post-secondary education and training and work. The oldest cohort was born in 1961, while the youngest was a nationally representative sample of Year 9 students selected in 1998. The information from the surveys is used to provide a picture of what young Australians are doing and how this picture changes both as the cohort gets older and compared with other cohorts. More detailed investigations look at the links between social characteristics, education and training, and employment. Issues investigated in the LSAY project include school completion, participation in vocational and university education, part-time work, unemployment, earnings and school achievement. The project is commissioned by the Department of Education, Training and Youth Affairs (DETYA).

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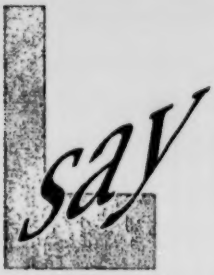

Longitudinal Surveys of Australian Youth

Research Report Number 13

PARTICIPATION IN EDUCATION AND TRAINING 1980 - 1994

Michael Long
Peter Carpenter
Martin Hayden

This report forms part of the Longitudinal Surveys of Australian Youth: a research program that is financially supported by the Commonwealth Department of Education, Training and Youth Affairs.

The views expressed in this report are those of the authors and not necessarily of the Commonwealth Department of Education, Training and Youth Affairs.

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This report is based on data from the *Youth in Transition* longitudinal surveys that have been conducted by the Australian Council for Educational Research (ACER) for the past two decades. Trevor Williams of ACER saw the potential in one of ACER's testing programs for the creation of a national panel of young Australians. The educational and labour market experiences of this sample could be recorded as they left school and undertook further education and training or entered the labour force. Three further samples were added at approximately five-year intervals to form what became the *Youth in Transition* project. Without Trevor's vision and ability to convince a number of government agencies to fund the initial and subsequent surveys, the *Youth in Transition* data would not exist. We also acknowledge the efforts of many other researchers at ACER who have worked on the *Youth in Transition* program over the last two decades and from whose work we have benefited.

This report extends analyses originally undertaken by Trevor Williams (*Participation in Education*), by the current authors with Trevor Williams (*Year 12 in the 1980s* and *Entering Higher Education in the 1980s*), and by the current authors (*Graduating from Higher Education*). We are indebted in many ways to Trevor for the initial conception of those analyses. Previous analyses were funded under the *Evaluation and Investigations Program* of the then Commonwealth Department of Employment, Education and Training. The current analyses were funded through the *Longitudinal Surveys of Australian Youth* (LSAY) program managed by ACER and funded jointly by ACER and the Commonwealth Department of Education, Training and Youth Affairs.

Finally, we acknowledge our debt to the many thousands of young Australians who have diligently completed questionnaires annually over many years for little personal reward. Their collective contributions have established a unique source of factual information on the transitions within and between education and the labour force.

Executive Summary

This report contributes substantially to the body of evidence available about participation by young people in education and training in Australia. It presents results on the patterns and processes of educational participation for four national cohorts of young Australians. These cohorts are samples of persons born in 1961, 1965, 1970 and 1975 respectively, who were aged 19 in 1980, 1984, 1989 and 1994 respectively. For each of the cohorts, the following types of educational participation are documented:

- completion of Year 12
- entry to higher education from Year 12
- participation in higher education
- participation in a TAFE course (excluding apprenticeships and traineeships)
- participation in an apprenticeship or traineeship
- participation in any form of post-school education and training.

In the report, educational participation is indicated by whether or not a particular individual ever participated in a particular form of education by age 19. This measure -- made possible by the longitudinal nature of the data on each of the cohorts -- produces estimates that are marginally higher than those obtained using more conventional cross-sectional data. Nevertheless, the trends in educational participation documented in this report are consistent with those reported from other sources.

In the analyses, patterns of educational participation by age 19 are examined for each of the categories of gender, parent's occupation and education, family wealth, father's country of birth, urban and rural background, State of schooling, school sector and level of early school achievement. Additional analyses address the effects of these variables independently of one another, and also independently of variables describing early school achievement, type of school attended, self-concept of ability and post-school expectations about study and work.

Despite some duplication, *the following discussion first presents the results from the perspective of each of the background characteristics and then for each of the types of education and training.*

The Background Characteristics *The main findings are:*

Gender. Participation in higher education by young females increased substantially during the period from 1980 to 1994, largely as a consequence of improved retention rates to Year 12, but also because of increased rates of transition from Year 12 to higher education. Among members of the cohort aged 19 in 1994, 42% of females had participated in higher education by age 19, compared with only 34% of males. Participation in vocational education and training by young females remained substantially below that for young males over the period from 1980 to 1994, but this gap

narrowed -- in part because of the decline in the importance of apprenticeships (in which females are under-represented); in part because of the expansion of traineeships (in which females are better-represented); and in part because of the expansion on non-apprenticeship vocational education and training (in which females are better-represented).

Parent's Occupation and Education, and Family Wealth. Three components of socio-economic status -- parent's occupational status, parent's education and family wealth -- were examined. Across all four cohorts, young people from backgrounds of higher parental occupational status, better parental educational attainment and greater family wealth were more likely to have completed Year 12, to have entered higher education from Year 12 and to have participated in higher education by age 19. Young people from these backgrounds were less likely, however, to have undertaken vocational education and training, although in the early 1980s young people from backgrounds of greater family wealth were more likely to have participated in vocational and educational training.

Differences in school completion associated with socio-economic status declined during the period 1980 to 1994, as graduation from Year 12 increasingly became a near universal qualification. Entry to higher education from Year 12, however, became more differentiated by the socio-economic background of the students. The net result was that there was little change in the socio-economic profile of students who participated in higher education. The combination of little change in the relative representation of young people from lower socio-economic backgrounds in higher education with an increasing level of participation in the vocational education and training sector resulted in a decline in the differences in participation in post-school education and training among young people from different socio-economic backgrounds. There was, however, some indication that gains in equity made during the 1980s were not maintained in the 1990s.

Ethnicity. Three categories of persons were identified: those whose father had been born in Australia; in another English-speaking country; or in a non-English-speaking country. Across all cohorts, young people from non-English-speaking backgrounds were more likely to have completed Year 12 and to have participated in higher education by age 19. There were no significant differences, however, in the extent to which young people from each of the three categories accessed TAFE programs, and participation in apprenticeships was generally not affected by ethnic background, except in 1980 when young people from non-English-speaking backgrounds were less likely to have undertaken an apprenticeship.

Rural and Urban Students. Respondents were identified as rural or urban on the basis of the population density of the Local Government Area in which their school was located when the cohorts were initially sampled. The quartile with the lowest population density was labelled *rural.* Across all four cohorts, the Year 12 completion rates, rates of entry to higher education and higher education participation rates by age 19 for rural students were well below those for urban students, especially so in 1994. Participation in

vocational education and training was not noticeably affected by school location, except in 1994 when rural students were more likely than urban students to have entered TAFE or to have commenced an apprenticeship. The relative disadvantage of rural youth in terms of participation in post-school education and training was similar in the mid 1990s to the levels that prevailed in the early and mid 1980s. Gains made in the late 1980s had disappeared.

Public and Private Schools. School type depended upon whether students were in a government, Catholic or independent school in the early years of their secondary schooling. Across all four cohorts, students from independent schools were more likely to have completed Year 12, to have entered higher education from Year 12 and to have participated in higher education by age 19 than were students from either government or Catholic schools. While much of this variation was due to differences in parent's occupational status, levels of school achievement and post-school expectations, there remained an identifiable effect of this variable upon educational participation once the influence of these other differences had been removed.

Students from government schools participated in vocational education and training to a greater extent than students from independent schools. The participation rates of students from Catholic schools lay between those of students from the other two sectors, but somewhat closer to the participation rates of students from government schools.

School Achievement. Four categories of school achievement were identified -- students in the highest, third, second and lowest quartiles of results on standardised multiple choice reading and mathematics tests. Students with higher achievement scores were far more likely to have completed Year 12, entered higher education from Year 12 and participated in higher education by age 19, across all cohorts. Over the period from 1980 to 1994, programs taught in TAFE (other than apprenticeships and traineeships) progressively tended to attract more students from the lower end of the achievement range, and the achievement profile of apprentices also declined through much of the 1980s, though this trend was reversed for the cohort aged 19 in 1994.

Changes in educational participation *The main trends were:*

Year 12 completion more than doubled -- up from 35% in 1980 to 78% in 1994. The students who were more likely to complete Year 12 were female, came from higher socio-economic backgrounds, were from a non-English-speaking background, lived in urban areas, had attended an independent school, and had higher levels of early school achievement. Apart from gender and ethnic background, differences in the rates of Year 12 completion *decreased* among categories of the background variables during the period 1980 to 1994.

Entry to higher education from Year 12 was almost unchanged throughout the period of the study -- about half of all persons who completed Year 12 went on to higher education. Year 12 graduates who were female, from higher socio-economic backgrounds, lived in

an urban area, had attended an independent school, and who had higher levels of early school achievement were more likely to enter higher education. During the period 1980 to 1994, differences in higher education entry *increased* for all characteristics except ethnic background.

Participation in higher education almost doubled -- from 20% in 1980 to 38% in 1994. The overall increase resulted from the increase in Year 12 completion coupled with an almost unchanged entry rate from Year 12 to higher education. Persons who were female, from a higher socio-economic background, from a non-English-speaking background, had lived in an urban area, had attended an independent school, and who had higher scores on the measures of early school achievement were more likely to participate in higher education. During the period 1980 to 1994, differences in higher education participation rates between males and females increased. The relative participation of students from the middle two quartiles of early school achievement also increased. Differences associated with socio-economic status and rural-urban location were unchanged, while higher education participation rates converged for categories of ethnicity and school type.

Participation in non-apprenticeship TAFE courses showed a consistent increase --up from 13% in 1980 to 20% in 1994. Attendance at a TAFE college is one of the most equitable forms of education in Australia. In 1994 the characteristics associated with a higher likelihood of participation were lower socio-economic status, rural background, attendance at a government school, and membership of the lowest quartile of early school achievement. During the 14 years covered by the study, however, the pattern of participation changed -- the difference which had favoured girls in 1980 almost disappeared by 1994, the advantage of young people from higher socio-economic background in 1980 had been reversed by 1994, and there was a shift towards greater participation by rural youth and by young people from the lower end of the early school achievement profile.

Participation in apprenticeships declined substantially in the early 1990s -- down from 18% in each of 1980 and 1984, to 16% in 1989, and then to 12% in 1994. This decline was offset somewhat by the introduction of traineeships -- up from 2% in 1989 to 3% in 1994. Persons who were male, from the middle of the socio-economic distribution, from a rural background, had attended a government school, and who were from the lowest three quartiles of the early school achievement distribution were more likely to have participated in apprenticeships.

Participation in post-school education and training increased from 49% in 1980 to 67% in 1994. Entrants to further education and training became more likely to have completed Year 12 -- up from 43% in 1980 to 75% in 1994 -- but the post-school participation of early school leavers also improved. Participants in post-school education and training were more likely to be male, to be from a higher socio-economic background, to be from a non-English-speaking background, to be from an urban area, to have attended an independent school, and to have higher scores on the literacy and numeracy tests. Relative participation rates for most background characteristics either were unchanged or converged between 1980 and 1994.

1. INTRODUCTION

This report draws on the *Youth in Transition* surveys to present educational participation rates for various categories of young Australians -- categories defined in terms of their family background, education and school education. The results span the period from the late 1970s to the mid 1990s. The focus of the report, therefore, is on the way in which educational experiences differ among the various categories of young people and on the way in which such differences may have changed over time.

Six forms of educational participation are identified:

- Completion of Year 12;
- Entry from Year 12 to higher education;
- Participation in higher education;
- Participation in TAFE (other than apprenticeship and traineeships);
- Participation in apprenticeships or traineeships; and
- Participation in any form of post-school education.

The overall level of educational and training opportunities available to young Australians is important. There is a well-established literature on the link between the knowledge and skills that education and training can provide, the economic returns for the individuals who participate in that education and training, the productivity of firms that employ those individuals, and the economic well-being of the nation. Individuals with higher levels of education are more likely to participate in the labour market and less likely to be unemployed. A component of the higher earnings of those with higher levels of educational attainment is attributable to their higher likelihood of subsequent participation in employment-based training. Firms that provide more training for their employees are more likely to have higher levels of productivity. Increases in the level of the educational attainment of the labour force have been linked to growth in national output and in the rate of labour productivity.

For individuals, then, access to participation in (often substantially government-subsidised) education and training is access to employment and higher earnings. Access to education is also linked to other positive outcomes that may also be directly related to better employment outcomes -- better health, lower likelihood of imprisonment, higher social status and the rewards that come with a sense of making a positive contribution to society.

The distribution of opportunities for participation in education and training influences the pattern of access to participation in the cultural and economic benefits of society. Government equity policies and programs in the area of education are a response to the moral, social and economic problems that can follow if these opportunities are not distributed equitably among various social groups. If equality of opportunity is a widely accepted value in a society, departures from that principle intrude a moral element into

the discussion. Social cohesion is threatened if groups of individuals, defined in terms of personal, family, or locational characteristics, have less access (or perceive themselves as having less access) to social and economic goods than other groups.

Equality of opportunity is an issue of economic efficiency, as well as of social justice. To the extent that individuals do not have equality of access to participation in education and training, the talents, abilities and potentialities of the population may be less than optimally developed and employed. Wastage of talent through unequal access to education and training is a cost to the individual and to the nation.

The themes explored in this report -- changes in the distribution of access to education and training by young Australians from different social categories -- are of considerable importance. The following is an overview of the remainder of the report.

Before beginning to explore the effects of family background and school education on later educational participation, we deal with some preliminaries. In the next chapter we describe the way in which the educational participation of young people has changed -- both in the overall level of that participation and in the meaning of that participation. Results are presented from the *Youth in Transition* surveys, from administrative data, and from surveys conducted by the Australian Bureau of Statistics.

In the third chapter we examine some of the reasons for changes in the overall level of educational participation. These include a discussion of changes in the youth labour market, government policies, economic restructuring, demographic changes, and the views of young people about education.

The fourth chapter is a discussion of the meaning of differences in rates of educational participation among young Australians and how these relate to the concept of *equity*. This is set in the context of a description of the structure of the tables presented in the subsequent chapters and the model, which informs the multivariate analyses presented in those tables.

The remaining chapters present and discuss, in turn, the differences in educational participation among categories of a number of characteristics of young people and the way in which these differences have changed during the 1980s and into the 1990s. The characteristics are:

- Gender;
- Socio-economic status;
- Country of birth;
- Rural-urban location;
- State of schooling;
- Type of school; and
- Early school achievement.

2. ESTIMATES OF PARTICIPATION IN EDUCATION AND TRAINING

This chapter describes the overall level of participation in education and training and the changes in the level of participation in recent decades. As part of that description we discuss the structure of our results, the measurement of the various types of education and training identified in this report (including their organisational context), and the way in which these measures relate to measures from other sources.

The Four Cohorts

Many of the tables in this report present results from the *Youth in Transition* program. There were four cohorts of young people in this program. After initially completing multiple-choice tests in reading comprehension and mathematics, participants completed an annual mail questionnaire. The groups were age-defined. The oldest cohort was born in 1961, the next in 1965, the third in 1970, and the most recent and youngest, in 1975.

The participation in education and training of the four groups is compared when each was aged 19. This means that we are looking at their educational participation in 1980, 1984, 1989 and 1994 respectively. Care must be taken with this definition when making comparisons with other data sources. For instance, the majority of Year 12 students in New South Wales are 17 or 18 years old at the end of their schooling (and 17 years old in, say, Western Australia). Hence the Year 12 completion rates we report should often be compared with apparent retention rates some one or two years before the year in which members of the cohorts were 19 years old. The comparison is even more difficult for participation in apprenticeships. Entry into apprenticeships is from age 16 onwards and the age distribution has shifted upwards in recent years.

There are some advantages to considering educational participation rates at age 19. In the usual course of events, the overwhelming majority of our respondents who are going to complete Year 12 directly (rather than by returning later as adults) will have done so by age 19. Age 19 is also useful when examining the transition from school to further education and training -- students who commence further education and training within a year or so of leaving school will have had the opportunity to do so by age 19. Additionally, many official statistics on participation in education and training are published for 15 to 19 year-olds. Reporting our results to age 19 improves the ability to make comparisons with those data sources.

When discussing the results for the four cohorts, instead of using the years in which the cohorts were aged 19 -- 1980, 1984, 1989 and 1994 -- we refer to the early 1980s, the mid 1980s, the late 1980s and the mid 1990s respectively in order to emphasise the spread of years in which the educational activity may have occurred.

The Forms of Participation

Year 12 Completion. In this report completion of Year 12 refers principally to completion of the highest level of secondary schooling available. In all States and Territories this is referred to as Year 12 (although for some States and Territories it is the 13th year of schooling if the initial grade, variously referred to as kindergarten or preparatory, is included). The overwhelming majority of young people in our samples undertook Year 12 in a secondary school. Some, however, completed their schooling in a Technical and Further Education (TAFE) college. Although it was the case for only a small minority of students in the more recent cohorts, increasingly co-operation between schools and TAFE colleges has allowed young people to complete a Year 12 course that combined elements of courses taught in both institutions. Such students are also considered as having completed Year 12.

The major source of statistical information about school completion in Australia is the Australian Bureau of Statistic's (ABS's) *Schools Australia* (Cat. No. 4220.0). This series presents apparent retention rates that are based on full-time enrolments in schools in Year 12 in July or August of a particular year. Our measure is a little different -- it includes part-time school students, students who completed Year 12 at TAFE and requires completion, that is, participation at the end of the school year. 'Completion' does not necessarily imply successful completion -- the measure is based ultimately on students' self reports of having completed Year 12.

Higher Education. The higher education sector has been substantially restructured during the period covered by the four cohorts. There are three major changes that have affected the measurement of participation in higher education. First, from 1985 nurse education was progressively transferred from hospitals to universities. The transfer has contributed to an increase in teenage participation of about one percentage point, though the effect has been greater for the participation rates of females (DEETYA, 1997: p. 14). Second, in 1989 the higher education sector changed from a binary system consisting of universities and colleges of advanced education (CAEs) to the Unified National System (UNS) which consists only of universities. The amalgamation of many institutions in order to meet the minimum enrolment requirements of the UNS means that it is difficult to report participation rates for anything other than the sector as a whole. Third, somewhat in anticipation of the creation of the UNS, there was a gradual upgrading of many undergraduate qualifications within the CAEs from diplomas and associate diplomas to degrees. Consequently it is often not very meaningful to examine changes over time in the level of participation in particular types of academic program. We therefore consider only one undifferentiated outcome -- any form of participation in higher education.

A small part of higher education enrolment is in TAFE colleges. These enrolments are not treated as participation in higher education in this report. Instead they are included in TAFE non-apprenticeship enrolments.

We provide two sets of higher education participation rates -- rates for Year 12 completers (which we term *entry rates*) and rates for the cohort as a whole (which we term *participation rates*). When investigating access to higher education, it is important to distinguish entry rates from participation rates. Most of the participation by young people in higher education is after the completion of Year 12. Hence access to higher education can be decomposed into two stages -- completion of Year 12 and then entry to higher education. These two stages correspond to different institutions and different government policies. There is value, then, in examining changes in access separately at each stage as well as their joint effect on higher education.

TAFE (non-apprenticeship). The release of the *Kangan Report* in 1975 is considered a watershed for technical education in Australia -- 'It placed TAFE as a broadly based vocational education and training sector, rather than a more narrow vocational skilling sector.' (Smith & Keating, 1997: p. 9). Commonwealth Government funding helped the sector to expand during the late 1970s and early 1980s. Despite relatively recent moves to encourage private providers of vocational education and training (VET), the government-supported TAFE colleges remain the major providers of VET in Australia, and certainly were during the period covered by this study.

The VET sector probably has greater diversity than the higher education sector. It offers courses covering almost every conceivable area of education and training in all industries. Courses range from recreational courses requiring only a few hours of instruction to three year Diploma and Advanced Diploma courses in professional disciplines such as accountancy. TAFE colleges also took a leading role during the late 1980s in the provision of labour market programs funded by the Commonwealth Government. There was a wide variation in award nomenclature during much the 1980s, and the generic term *Certificate* described a range of outcomes. Our measures are restricted to persons who described themselves as undertaking a Certificate, Associate Diploma, Diploma or (in very rare instances) Degree course in a TAFE college. Recreational enrolments are relatively rare among young people up to age 19 and were not included in our measures where they could be identified.

The implications of the Kangan report for the VET sector were worked out gradually during the 1980s. Towards the end of the decade and into the 1990s a series of proposals, collectively referred to as the *Training Reform Agenda,* began to take shape. These include such concepts as *training markets, competency based training, registered training providers* and *national recognition of skills* which were given an administrative home with the creation of the Australian National Training Authority in 1994. These changes, however, were introduced too recently to have had very much impact on even our youngest cohort.

Apprenticeship. Entry-level workplace training was for a long period identified with the term apprenticeship -- a contract of training between an employee and an employer. The arrangement provides work-experience, off-the-job training (usually at a TAFE college), employment, a government subsidy for the employer and a qualification in a recognised trade after three or four years. In many senses, apprenticeships are an ideal pathway from

school to the workforce. The problem with apprenticeships, however, was that they were oriented towards the declining manufacturing sector and, with some notable exceptions such as hairdressing, absent from the expanding service and retail sectors. They also provided only limited opportunities for females.

Traineeships were proposed as the solution to this problem. They were to be more flexible than apprenticeships, of shorter duration, in different industries and occupations, but similar in concept. The *Australian Traineeship System* was initiated in 1986. Various modifications or adjuncts followed: Career Start Traineeships, the Australian Vocational Training System and the National Employment and Training Taskforce (NETTFORCE). Commencements remained modest until after 1994, when numbers increased sharply -- an increase attributed by Smith and Keating (1997: p 80) to the success of NETTFORCE in removing institutional impediments to the employment of trainees and the provision of training. Our measures of apprenticeship participation include participants in traineeships. They make only a modest contribution to our estimates for the 1970 and 1975 cohorts.

Post-School Education and Training. This category consists of persons who participated in higher education, TAFE, apprenticeships, or traineeships, as well as a small group of persons who participated in some other form of post-school study for a recognised qualification. For the first two cohorts, initial nurse education, which was then conducted at hospitals, was included in this category. Persons attending private business schools comprised most of the remainder of the *Other* category. Participation in this category, however, is not simply the sum of participation in each of the component categories -- persons can participate in more than one form of post-school education and training and hence there is overlap.

Measures of Participation

The educational participation rates presented in this report can be interpreted directly as the percentage of a given cohort who participate in a particular form of education. As such, these rates differ from those usually published by the Australian Bureau of Statistics or other government authorities. *Participation* in this report means *ever-in* whereas education participation more usually means *participation in the reference year* or *at a given point in time.* Put differently, our results use the longitudinal structure of our data, whereas many other studies are only able to present a cross-sectional picture. For an individual to be recorded in this report as having participated in an apprenticeship *by* age 19, they do not need to have participated *when* they were age 19. The respondent could have been an apprentice when he or she was age 17 and then not continued with the apprenticeship. For our purposes, that individual is still recorded as having participated in an apprenticeship.

In the normal course of events it is reasonable to expect ever-in estimates to be higher than any corresponding cross-sectional estimate. There is, however, a countervailing influence that will lead to lower estimates of participation. The participation estimates in this report are based on whether the respondent had ever participated in a particular form

of education or training in *October* of a given year. Using October as a benchmark involves substantial under-enumeration of total participation. For those courses that run for a full calendar year (as many tertiary courses do), our participation measures will fail to record the participation of students who enrolled but discontinued before October of that year. This makes our estimates more measures of *substantial* participation. This effect, will, however, lead to lower estimates than those based on reported enrolments earlier in the calendar year.

The problem is greater, however, for courses of shorter duration. Participation in even a one-semester course in the first half of the calendar year will not be included. Many Certificate II courses offered in the VET sector have precisely this structure. Students leave school at the end of one calendar year and enrol (typically) in a Certificate II course in TAFE at the start of the next calendar year. The course is completed by June and the student exits post-school education without their participation having been recorded.

Ours is not the only survey to encounter these difficulties. There is, for instance, a substantial difference in estimates of participation in the vocational education and training system derived from enrolment data and estimates from the ABS monthly surveys. Much of this difference can be attributed to the fact that enrolments reflect participation at any time in the year while the ABS surveys report participation in a given week.

In short, the definition of post-school participation as being *ever-in* a given form of education by age 19 leads to *higher* estimates than those based on cross-sectional surveys. Using *October* as the reference month for participation leads to *lower* estimates than those provided by some other survey or administrative sources. It is not clear, for any particular estimate, which will be the stronger influence.

Estimates of Participation

In this section we present estimates of Year 12 completion and participation in post-school education from the four *Youth in Transition* cohorts. As a check on our results we also provide time-series estimates from other sources later in this chapter and elsewhere in the report.

Youth in Transition

Panel A of Table 1 shows school completion rates and participation rates for the various forms of post-school education considered in this report. There is substantial growth in most forms of post-compulsory education. Year 12 completion rates have more than doubled in the 14 years spanned by the four cohorts of the survey. In the early 1980s just over a third of the cohort completed Year 12. There was little growth to the mid 1980s, but by the late 1980s more than a half of the cohort completed Year 12, and by the mid 1990s more than three quarters of the cohort had completed Year 12. This is one of the most profound changes to have occurred in Australian education. It has had a substantial effect on the social composition of the population of Year 12 students. The growth in Year 12 completion has been associated with changes in the youth labour market, in post-school education and training and in the cost of school education.

Table 1 Year 12 Completion and Selected Forms of Educational Participation by Age 19: 1980, 1984, 1989 and 1994

Cohort born in . . .	1961	1965	1970	1975
At age 19 in . . .	1980	1984	1989	1994
	%	%	%	%
Panel A: Completion and Participation Rates				
Year 12 completion	35	37	55	78
Higher education	20	19	28	38
TAFE (non-apprenticeship)	13	16	18	20
Apprenticeships inc. traineeships	18	18	18	14
Apprenticeships	18	18	16	12
Traineeships	--	--	2	3
Post-school education & training	49	56	65	67
Sample size	3433	2867	1775	3215
Panel B: Entry Rates from Year 12				
Higher education	50	48	51	48
TAFE (non-apprenticeship)	15	15	15	19
Apprenticeships inc. traineeships	7	3	8	8
Apprenticeships	7	3	5	6
Traineeships	--	--	3	2
Post-school education & training	70	72	75	71
Sample size	1213	1057	983	2515
Panel C: Entry without Year 12				
Higher education	4	1	0	0
TAFE (non-apprenticeship)	11	17	23	22
Apprenticeships inc. traineeships	24	27	31	35
Apprenticeships	24	27	29	31
Traineeships	--	--	2	4
Post-school education & training	37	47	51	52
Sample size	2220	1810	792	700
Panel D: Participants with Year 12				
Higher education	88	96	100	100
TAFE (non-apprenticeship)	43	34	44	75
Apprenticeships inc. traineeships	14	5	24	47
Apprenticeships	14	5	19	41
Traineeships	--	--	63	69
Post-school education & training	51	47	65	83

See *Notes to Tables*

During the same period, participation in higher education nearly doubled. A fifth of young people participated in higher education in the early 1980s, but by the mid 1990s this had increased to just under two fifths. The increase only began after the mid 1980s.

Participation in TAFE programs (excluding apprenticeships and traineeships) also increased substantially and more or less uniformly from the early 1980s (13%) to the mid 1990s (20%). Participation in apprenticeships, however, declined by about a third -- from 18% for the oldest cohort to 12% for the youngest cohort. The introduction and growth of traineeships from the late 1980s compensated for some of this decline. Nevertheless, this was not sufficient to arrest the overall decline in participation in employment-based education and training by young people.

The combined effect of these changes has been a substantial growth in the participation of young Australians in post-school education and training. In the early 1980s about a half of school leavers participated in post-school education by age 19. By the mid 1990s two-thirds of the youngest cohort participated in some form of post-school education and training by age 19.

Panel B shows the percentage of Year 12 graduates for a given cohort who enter the various forms of post-school education and training while Panel C shows the access to further education and training of young people who did not complete Year 12. These values address the issue of whether completion of Year 12 has become more or less important as a gateway to further education and training. The values in Panels B and C need to be interpreted in the context of the substantial increase in Year 12 completion that occurred during the 14 years covered by these four cohorts.

The growth in participation in higher education observed in Panel A is a consequence of maintaining entry rates from Year 12 to higher education despite the increase in the proportion of young people completing Year 12. Entry rates from Year 12 to higher education have remained more or less constant during the course of this study. There was a slight dip in the mid 1980s and again in the mid 1990s. At the same time, entry to higher education without completion of Year 12 has almost disappeared for young people. Hence Year 12 has become increasingly important for the pathway into higher education.

The proportion of Year 12 graduates who entered TAFE (excluding apprenticeships) was unchanged at 15% throughout the 1980s but increased to 19% in the 1990s. The absolute increase is not large (only 4 percentage points) but represents a relative increase of more than a quarter. Entry by young people who had not completed Year 12, however, doubled during this period. Non-completion of Year 12 became less of a barrier to entry to TAFE.

Entry to apprenticeships from Year 12 was marginally lower in the mid 1990s than at the start of the 1980s, but even so represents a substantial recovery from the sharp decline evident in the mid 1980s. In combination with traineeships, however, the percentage of Year 12 graduates who entered apprenticeships increased slightly between the oldest and youngest cohorts. Entry to apprenticeships -- and to apprenticeships and traineeships collectively -- increased for young people who had not completed Year 12 during the

same period. Completion of Year 12 was less a barrier to becoming an apprentice or trainee in the 1990s than in the early and mid 1980s.

Overall, the opportunities for entry to post-school education and training for young people who did not complete Year 12 increased during the 14 years spanned by the four cohorts. On the other hand, the percentage of Year 12 graduates who proceeded to some form of post-school education was almost unchanged between the oldest and youngest cohorts, after peaking in the late 1980s and then falling.

The meaning of the values in Panel D differs from the meaning of the values in Panel B, despite the fact that both refer to Year 12 graduates. The values in Panel B are percentages of Year 12 graduates who participate in a given form of post-school education. The values in Panel D, however, are the percentages of participants who had completed Year 12. These values address the issue of whether the years of schooling of entrants to the various forms of post-school education and training have increased. The substantial growth in Year 12 completion (Panel A) should lead to a substantial increase in the percentage of post-school education participants who have completed Year 12 -- and this is what we observe in Panel D.

The percentage of young persons entering higher education with a Year 12 qualification, although always high, has increased. In the early 1980s the Colleges of Advanced Education within the higher education sector offered Associate Diplomas and Diplomas that did not always require completion of Year 12 for entry. Many colleges had TAFE components -- to the extent that TAFE courses were less dependent on Year 12 completion at that time, these provided a pathway for entry to higher education without having completed Year 12. The values of 100% for the percentage of higher education entrants with Year 12 for the two young cohorts hide a small number of non-Year 12 entrants within rounding. Apart from mature-age entry (which is not applicable to entrants such as those in Table 1), the universities provide bridging programs for a small number of young unqualified entrants in certain equity categories.

Participants in TAFE (non-apprenticeship) programs have also become more likely to have completed Year 12. The percentage of entrants with Year 12 has increased from 43% at the start of the 1980s to 75% in the mid 1990s (although there was a substantially lower percentage with Year 12 in the mid 1980s). The increase in Year 12 completion rates, then, has had a stronger effect than the increase in access by entrants who had not completed Year 12.

The pattern for participants in apprenticeships is similar -- the percentage who were Year 12 graduates nearly tripled over the 14 years spanned by the cohorts after dipping substantially in the mid 1980s. Given the relatively small numbers involved, not too much importance should be attached to the results for traineeships.

The substantial increase in Year 12 completion means that members of the most recent cohort entering any form of post-school education and training, and post-school education and training overall, had completed more years of schooling than members of any of the three earlier cohorts.

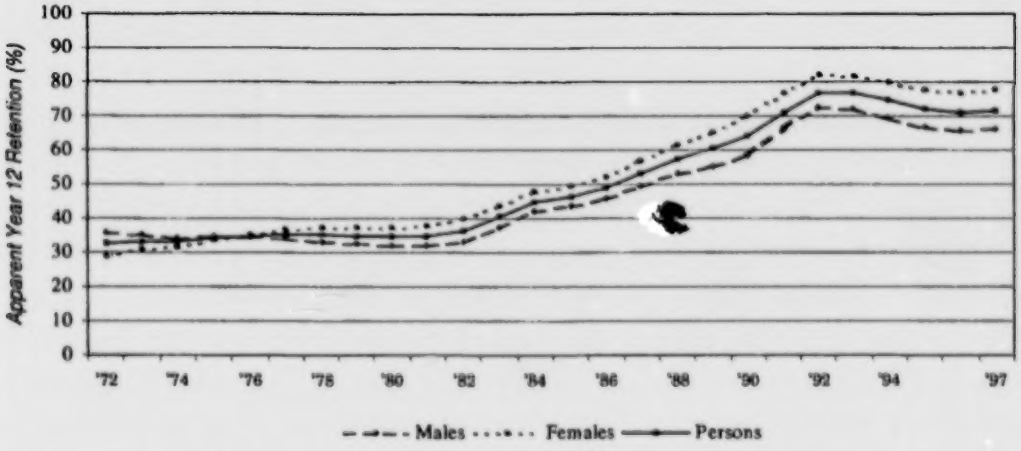

Figure 1 Apparent Year 12 Retention Rates by Gender: Australia 1972-1997
Source: *Schools Australia* ABS Cat. No. 4221.0 and 4202.0.

Other Estimates

Year 12. Information on school enrolments is available from the *National Schools Statistics Collection (NSSC)*. The collection brings together data on student enrolments from the school systems of each of the eight State and Territory governments and from the non-government schools. The component sources of the NSSC have had a common set of definitions, classifications and coverage since 1984. Results are published annually in *Schools Australia* (ABS, Cat. No. 4221.0).

Apparent retention rates of full-time secondary school students to Year 12 can be calculated for the NSSC and used to investigate changes in the extent of the schooling of young Australians. The apparent retention rates compare the number of students at the start of secondary school (Year 7 in some States, Year 8 in others) in a given year with the number of students enrolled in Year 12 five or four years later as appropriate. Apparent retention rates only provide an approximation to actual retention rates -- they are affected by several extraneous factors including migration, re-classification of students as ungraded, mortality, and the number of students repeating grades. The estimates of apparent secondary school retention rates calculated from the NSSC differ from our estimates because the former usually exclude part-time enrolments and enrolments in Year 12 in TAFE.

Figure 1 shows the apparent retention rates of full-time secondary school students to Year 12 for the period 1972 to 1997. In the 1970s and early 1980s about a third of each cohort of students completed Year 12. Through the rest of the 1980s there was steady growth in apparent retention until it peaked in 1992 at 77%, and then declined somewhat

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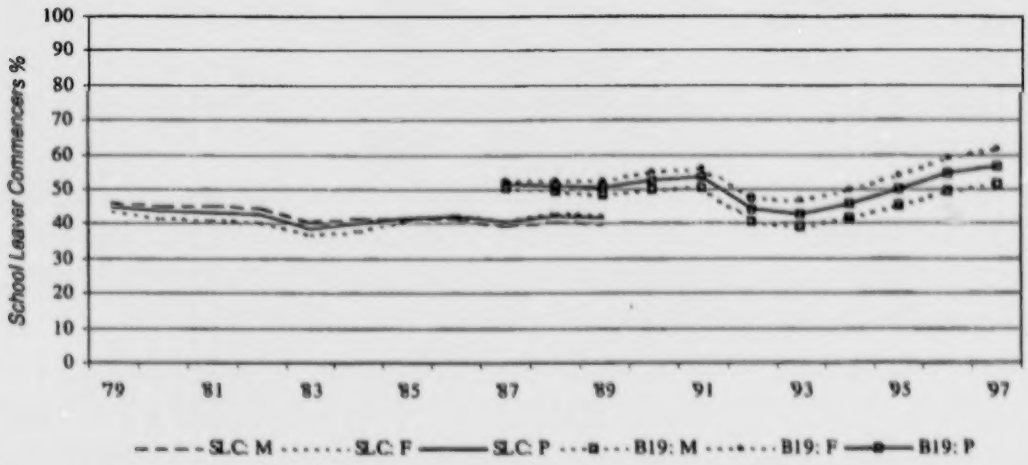

Figure 2 **Transfer from Year 12 to Higher Education: Australia 1979-1997**

Source: School-leaver Commencers, *Higher Education Series*, Report No. 2, March 1990. Higher Education Students Time Series Tables (DEETYA, 1998). *Schools Australia* ABS Cat. No. 4221.0.

to 71% in 1996. Our estimates correspond to these results if we recall that Year 12 completion typically occurred one, two or three years before our respondents reached age 19. The estimate of 35% for the 1961 cohort is similar to retention rates for the period 1977-79, the 1965 cohort estimate of 37% picks up the very beginning of the increase in Year 12 retention, the 1970 cohort (55%) was in the middle of the period of increased Year 12 retention, and members of the 1975 cohort were completing Year 12 at the peak of Year 12 retention. The subsequent decline post-dates the period covered by the four *Youth in Transition* cohorts.

Higher Education. This section draws on information from the Higher Education Student Data Collection and the NSSC to present results that show changes in the extent of transfer from Year 12 to higher education and the changing level of the participation of young Australians in higher education. The Collection is based on student enrolment records supplied by universities in a common format to the Commonwealth.

Figure 2 shows results for males, females and persons for two series of values that relate to the transfer from Year 12 to higher education. The two series are for different periods, but together span the years covered the four *Youth in Transition* cohorts. The first series consists of the ratio of School Leaver Commencers -- persons who entered higher education in the year immediately after completing Year 12 -- to persons enrolled in Year 12 in the preceding year. The values in Figure 2 for this series are between 40 and 45 per cent in the period from 1979 to 1992 with some suggestion of a decline over that period. This series in Figure 2 shows immediate transfer from Year 12. The number of students who enrol after a year's delay is about a quarter of those who enter immediately (DEETYA, 1994). The corresponding values for those who enter higher education from Year 12 would be somewhere between 50% and 56% -- broadly in

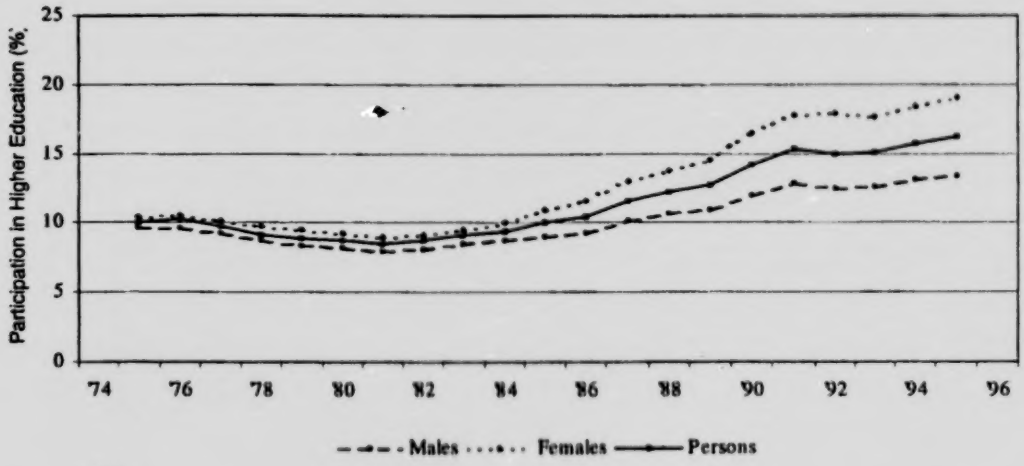

Figure 3 Higher Education Full-Time Participation Rates of 17 to 19 Year-olds by Gender: Australia 1975-1997

Source: *Higher Education Participation Rates, Australia* (DEETYA, 1997).

line with our estimates if it is noted that delayed entry may have increased somewhat during the period of the study.

The second series of values in Figure 2 is the ratio of students aged 19 or younger who enrolled in higher education in a given year divided by the number of students enrolled in Year 12 in the previous year. This changes the definition of Year 12 transfer a little, but the overwhelming majority of these students would have completed secondary school one or two years before entering higher education. The pattern of this series is fairly stable at just over 50% for the late 1980s before declining to just over 45% in the early 1990s and then rising again. These values too are broadly in line with our estimates of 50% for the late 1980s and 48% for the mid 1990s.

While entry to higher education from Year 12 may have been more or less steady during the 1980s and early 1990s, participation in Year 12 increased substantially during that time. Figure 3 shows the resultant increase in participation in higher education for 17 to 19 year-olds. Participation rates fell from just over 10% in the mid 1970s to 8.5% in 1981 and then increased almost uniformly to nearly double at 16.2% in 1995.

These results are consistent with the pattern of results in Table 1. Higher education participation rates declined marginally between the 1961 and 1965 cohorts and then nearly doubled by the mid 1990s. The absolute size of the rates, however, is at least twice as high in our estimates. This again emphasises the difference between cross-sectional participation rates (such as those in Figure 3) and cohort participation rates (such as those in Table 1).

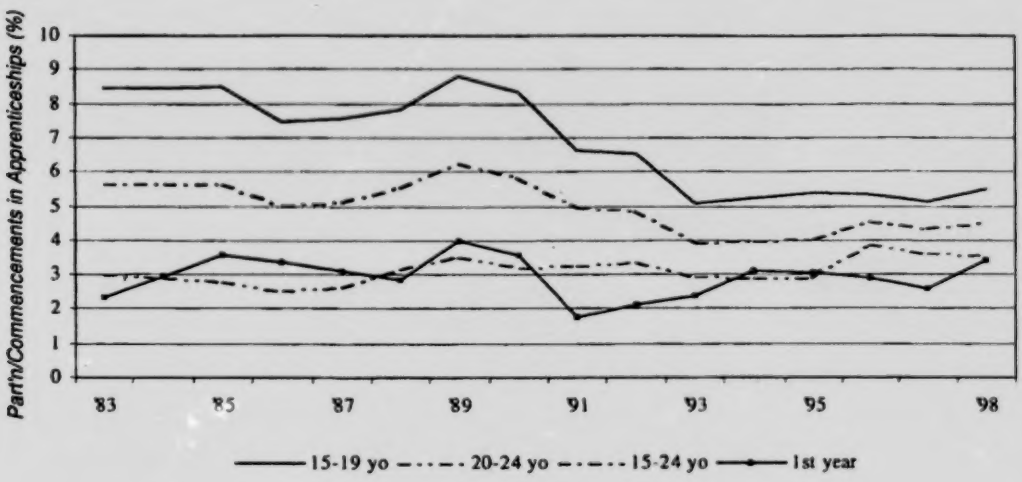

Figure 4 Apprenticeship Participation Rates, 15 to 19, 20 to 24 and 15 to 24 Year-olds, and First Year Apprenticeship Participation Rates, 15 to 19 Year-olds: Australia 1983-1998

Source: *Transition from Education to Work* ABS Cat. No. 6227.0.

Apprenticeships. Figure 4 shows two series of results for apprenticeships. The first series consists of the rate of participation of 15 to 19 year-olds, 20 to 24 year-olds, and 15 to 24 year-olds. The participation rates of 15 to 19 year-olds shows quite substantial changes. After remaining fairly stable at between 7.5% and 8.5% for much of the 1980s, it peaked at 8.8% in 1989 and then declined markedly during the next few years before stabilising at just over 5.0%. Participation rates for 20 to 24 year-olds appeared to be insulated against these changes -- they were relatively stable at around 3.0% for much of the period, only increasing to around 4.0% after the mid 1990s.

The change (and stability) in these rates is the result of several confounding factors. The values in Figure 4 show that participation rates for apprenticeships declined for the 15 to 24 year-old group as a whole (which contains the overwhelming majority of apprentices). For the 20-24 year-old group the decline in apprenticeships was offset by the increasing tendency for apprenticeships to be undertaken after completion of Year 12 (see Table 1) and hence to be undertaken by older candidates. This change also reduced participation rates for the 15 to 19 year-old group. At the same time, some apprenticeships became longer. This increased participation rates (without increasing the proportion of any cohort undertaking apprenticeships) principally for the 20 to 24 year-old group.

Figure 4 also shows the percent of the 15 to 19 year-old age group who were in their first year of an apprenticeship, a value we will term *apprenticeship entry rates.* The participation rate for *all* apprenticeships is a moving average over several years because it includes young people in the first, second, third, fourth and fifth years of their apprenticeships. Entry rates for apprenticeships, however, reflect annual changes in

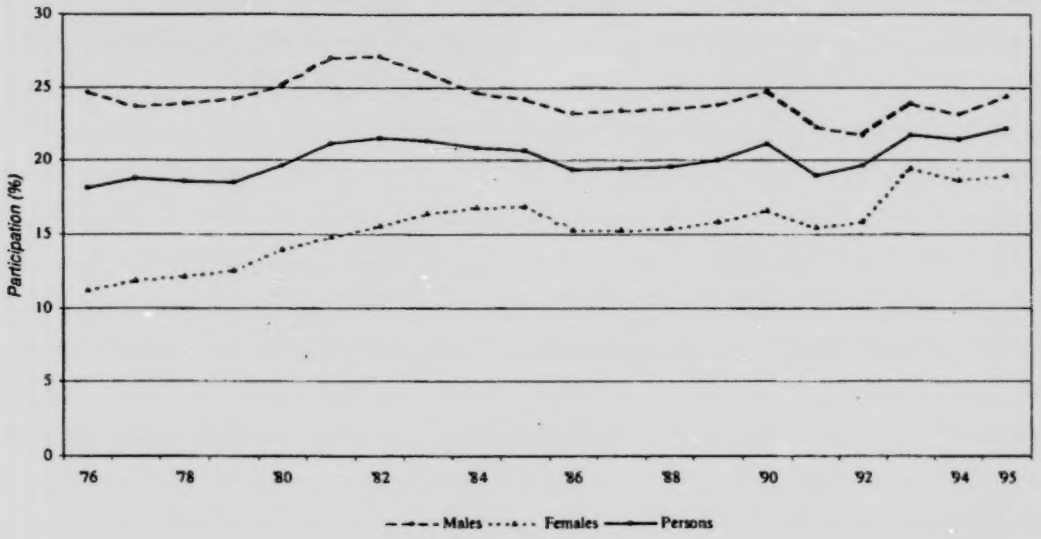

Figure 5 Apprenticeship and Traineeship Commencements as a Percentage of Persons Aged 15 to 19 Years: Australia 1981-1997

Source: *Apprenticeship Statistics 1984-85 1993-94*, NCVER and unpublished statistics.
ANTA, unpublished papers.
Nettforce Update, November 1996.
Australian Demographic Statistics, ABS Cat. No. 3101.0.

the number of new apprenticeships -- hence they are more volatile. Although the absolute changes are small, usually only one or two percentage points, the relative changes are quite large. Between 1989 and 1991, for instance, entry rates halved from about 4% to less than 2%.

The values in Figure 4 show a recovery from quite low entry rates in the early 1980s to a peak in 1989, followed by a substantial decline during the recession of the early 1990s and a subsequent recovery. The very substantial annual changes in entry rates for apprenticeships are often not reflected in the values in Table 1. Certainly the values for the most recent cohort do show the substantial decline in apprenticeship entry in the early 1980s. Results for the other cohorts, however, both average values across several years and seem to have missed the peaks and troughs of entry rates.

There are clear and acknowledged links between apprenticeship commencements (and continuance) and the business cycle. There is therefore a volatility in apprenticeship participation rates that is not evident in the participation rates of other forms of education. Hence it is important to examine time series data over several decades before advancing opinions on whether apprenticeships are declining in importance as a pathway from school to work for young Australians.

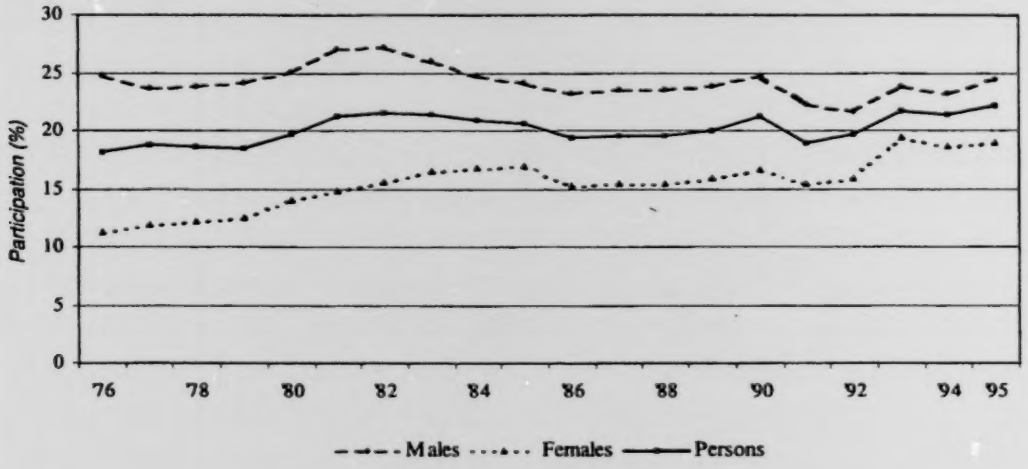

Figure 6 TAFE Enrolments as a Percentage of Persons Aged 15 to 19 Years: Australia 1976-1995

Source: *Selected TAFE Statistics, various years.*
Selected VET Statistics, various years.
Australian Demographic Statistics, ABS Cat. No. 3101.0.

Figure 5 displays some further features of the changes in participation in apprenticeships and traineeships. The values are drawn from administrative records and are for persons entering into a formal contract of training, that is, persons commencing either an apprenticeship or (from 1985-86) a traineeship. These are displayed separately and in total as percentages of the 15 to 19 year-old population.

The values in Figure 5 are generally somewhat higher than the corresponding first year enrolments shown in Figure 4, possibly because some commencers have discontinued before being interviewed for the ABS surveys. The series in Figure 5 starts two years earlier than in Figure 4 and suggests that 1983 was a low point in apprenticeship commencements and perhaps therefore not a good year to select as a base for comparisons. The other major features of the pattern are similar -- a peak in commencements in 1989-90 followed by a sharp decline in the early 1990s. Interestingly, this series also shows a substantial recovery in apprenticeship commencements through the mid 1990s back to levels that prevailed throughout much of the 1980s.

The major feature of Figure 5 is the growing importance of traineeships. Participation in traineeships was relatively low during the late 1980s, a result that corresponds with the estimates in Table 1. It was not until the mid 1990s that participation in traineeships began to increase substantially and this growth is therefore not reflected in values for our most recent cohort.

TAFE. Published data are not available in a sufficiently disaggregated form to allow the presentation of teenage participation rates in non-apprenticeship TAFE courses for a consistent time-series. Figure 6, however, shows that participation in TAFE courses overall has increased modestly from the late 1970s to the mid 1990s. We can put this result together with the results from Figures 4 and 5 which showed a decline in apprenticeship participation in this age group and conclude that participation in non-apprenticeship TAFE has probably increased slightly through much of the 1980s and increased further in the 1990s.

The values in Table 1 suggest a somewhat stronger increase in participation in non-apprenticeship TAFE. The two sets of results, however, are more consistent than may be apparent. If participation in TAFE for teenagers is increasingly after the completion of Year 12, even constant cross-sectional participation rates may be consistent with a higher percentage of each cohort participating in non-apprenticeship TAFE -- and that is what is being measured in Table 1.

Summary

The measures of educational participation presented in this report make use of the cohort structure of our longitudinal data -- they measure whether given individuals had ever participated in a particular form of education or training by age 19. As such, they differ from the more usual cross-sectional estimates presented from other sources. Nevertheless, the trends revealed by our data are consistent with those from other sources.

During the 14 years spanned by the four cohorts in this report (the early 1980s to mid 1990s):

- Year 12 completion more than doubled between the early 1980s (35%) and the mid 1990s (78%).
- Completion of Year 12 remained an important prerequisite for entry to post-school education and training, but the opportunities for early school leavers to participate in further education and training improved.
- Young entrants to further education and training were more likely to have completed Year 12 in 1994 (75%) than in 1980 (43%).
- Participation in higher education has almost doubled from the early 1980s (20%) to the mid 1990s (39%).
- Participation in non-apprenticeship TAFE courses has shown a consistent increase from 13% in 1980 to 20% in 1994.
- Participation in apprenticeships declined substantially. The decline was offset somewhat by an increase in traineeships. The most recent cohort in our study coincided with a low point in apprenticeship commencements and commencements subsequently increased.

3. FACTORS AFFECTING CHANGES IN EDUCATIONAL PARTICIPATION

The previous chapter documented the changes in the level of Year 12 completion and in the extent of participation in post-school education by young people. This chapter reviews some of the factors that may have contributed to those changes. Initially we examine the views of young people themselves -- the reasons that they think are important for completing or not completing secondary schooling. We then proceed to examine some of the changes -- principally economic -- that lie behind those reasons. The discussion focuses on the supply and demand for participation in education -- the changes that have influenced the real and perceived costs and benefits associated with participation in education.

Much of the literature in the economics of education treats education as a form of investment made by (or on behalf of) the student. An individual foregoes current earnings while studying in order to receive higher earnings (including higher levels of employment) in the future. Apart from direct economic benefits through employment, education has also been associated with additional economic and personal outcomes such as improved health and lower incarceration rates. Education is, however, also a consumer good -- people may enjoy learning. Participation in education may also be a choice of lifestyle which itself holds certain attractions (and drawbacks). Factors that influence the perceived costs and benefits of education are likely to be those that affect educational participation.

The sources of change in the level of educational participation may be different from the factors that contribute to different levels of participation for particular categories of individuals. For instance, gender may be an important influence on participation in some forms of education, but the sex ratio itself has been constant -- educational participation has not increased because there are proportionately more girls now than there were 20 years ago. On the other hand, some variables associated with different levels of educational participation may themselves be linked to *changes* in the level of participation. If participation in higher education is greater for the children of parents with post-secondary qualifications, and the proportion of parents with post-secondary qualifications increases, then participation in higher education might be expected to increase. Later chapters address the influence of social and educational background characteristics on educational participation.

Reasons for Leaving School

This section presents some information about the relative importance of reasons for leaving school. The results are from the most recent *Youth in Transition* cohort -- persons born in 1975 who were 19 years old in 1994 -- and from an earlier Australian Bureau of Statistics (ABS) survey. The results presented in this section provide insights into the educational and employment motivations of young people.

Members of the 1975 *Youth in Transition* cohort were asked to rate the importance of items in a list of reasons for leaving school before Year 12. The results are shown in Table 2. The most important reason for leaving school for both males and females

Table 2 Reasons for Not Completing Year 12: 1975 Cohort in 1994 at Age 19, by Gender

How important to you were the following reasons for not completing Year 12?

Importance . . .	*Very*	*Fairly*	*Not very*	*Not at all*
Males (%)				
1. I found a job . . .	64	16	10	10
2. I wanted to earn some money for myself . . .	46	29	14	11
3. I wanted to do some other training or study . . .	35	18	16	31
4. I wanted to do an apprenticeship . . .	60	12	6	22
5. I didn't need Year 12 for what I wanted to do . . .	25	23	17	34
6. I didn't like school . . .	26	30	26	18
7. I didn't think I would pass Year 12 . . .	20	19	18	43
8. I wasn't good at schoolwork . . .	15	25	21	39
9. Year 12 looked like too much work . . .	12	16	24	49
10. Financially, it was hard to stay at school . . .	3	13	22	63
11. My parent(s) didn't want me to continue at school . . .	4	10	22	65
Females (%)				
1. I found a job . . .	46	28	10	16
2. I wanted to earn some money for myself . . .	31	33	15	20
3. I wanted to do some other training or study . . .	33	24	9	35
4. I wanted to do an apprenticeship . . .	17	10	14	59
5. I didn't need Year 12 for what I wanted to do . . .	22	21	19	38
6. I didn't like school . . .	15	30	23	31
7. I didn't think I would pass Year 12 . . .	16	22	22	40
8. I wasn't good at schoolwork . . .	12	18	23	47
9. Year 12 looked like too much work . . .	4	11	29	55
10. Financially, it was hard to stay at school . . .	11	10	20	59
11. My parent(s) didn't want me to continue at school . . .	5	7	12	75
Persons (%)				
1. I found a job . . .	56	22	10	13
2. I wanted to earn some money for myself . . .	39	31	15	16
3. I wanted to do some other training or study . . .	34	21	12	33
4. I wanted to do an apprenticeship . . .	40	11	10	40
5. I didn't need Year 12 for what I wanted to do . . .	23	22	18	36
6. I didn't like school . . .	21	30	24	24
7. I didn't think I would pass Year 12 . . .	18	21	20	42
8. I wasn't good at schoolwork . . .	14	21	22	43
9. Year 12 looked like too much work . . .	8	13	26	52
10. Financially, it was hard to stay at school . . .	7	12	21	61
11. My parent(s) didn't want me to continue at school . . .	4	8	17	70

Notes:

1. Response from 618 members (321 males, 297 females) of the 1975 cohort in 1994 when they were 19 years old.
2. Responses are ordered from high to low on the basis of the percentage of persons answering either *Very* or *Fairly* to each item.
3. In the questionnaire Item 3 immediately followed Item 4 -- hence the sense of *other* is *other than apprenticeship.*

(although somewhat less important for females) was that they had found a job (56%) and wanted to earn their own money (39%). The desire to undertake further education and training was also significant. Apprenticeships were more important for males (60% very important) than females (17%), but undertaking some other (non-apprenticeship) education and training was important to about a third of both sexes. About a quarter of early school leavers felt that they did not need Year 12 for what they want to do. These are the positive aspects to the motivation for leaving school early -- it is not dropping-out, but moving on.

Many students leave school because they do not like it. This was a very important reason for 25% of males and 15% of females and an important reason for a further 30% of both males and females. In all, then, dislike of school was an important or very important reason for leaving school before Year 12 for about half of early school leavers.

Academic ability (or the perceived lack of it) was a motivating factor for at least a third of respondents -- 39% indicated that thinking that they would not pass Year 12 was an important or very important reason for leaving school and 35% indicated that not being good at school work was an important or very important reason. Only 21% indicated that the anticipated workload in Year 12 was a reason for leaving school.

Financial difficulties were, by comparison, not an important reason for leaving school for the majority of early school leavers. Still, about a fifth of early school leavers responded that this was an important or very important reason for leaving school. Parental opposition to staying at school was an important or very important reason for leaving for 12% of the early school leavers.

In 1982, near the beginning of the period covered by this report, the Australian Bureau of Statistics (ABS) collected information on the reasons young people had completed or not completed Year 12. (ABS, 4214.0). Although the questions differed from those in *Youth in Transition*, the survey produced a similar hierarchy of reasons which is shown in Table 3. Both surveys point to the desire for work and employment as the major reason for leaving school before the end of Year 12. Leaving school early is not necessarily associated with a desire to stop learning. Many early school leavers want to take up other training options -- but not in school. A dislike of school is a major reason for leaving school. Parental opposition to staying at school was less frequently a motivating factor.

The ABS survey also investigated the importance of various reasons for completing Year 12. The results are shown in Table 3 and highlight the role of the labour market in educational decisions -- both in terms of expectations of future, better, jobs and in terms of the unavailability of jobs at the present.

The ABS *Survey of Education and Training* revisited these issues in 1997, albeit with somewhat different questions (ABS, 1998). For 15 to 24 year-olds who had left school without completing Year 12, the *main* reason they gave for leaving school were work-related (46%, principally to get a job or apprenticeship), school-related (23%, principally did not like school or teachers), personal or family reasons (18%, principally lack of interest or motivation), and other (13%). Again, the hierarchy of reasons is similar.

Table 3 Importance of Reasons for Completing and Not Completing Year 12: Persons Aged 14 to 20 Years, 1982

Reason	% Important
Reasons for not completing Year 12	
Wanted to get a job	91
Wanted their own money	60
Wanted to undertake job training not available at school	58
Were fed up with school	52
Considered some subjects to be useless	45
Wanted to begin an apprenticeship	42
Did not want to undertake tertiary studies	27
Considered some subjects to be too hard	26
Did not get on with teachers	22
Had friends leaving school	14
Parent's wishes	8
Reason for Completing Year 12	
Considered Year 12 would help to obtain a preferred job	90
Liked the subjects at school	70
Enjoyed school	68
Needed Year 12 for tertiary study	66
Parent's wishes	49
Could not obtain a job	24
Had friends who were staying on	22
Hadn't much else to do	20

Source: *Reasons for Completion and Non-completion of Secondary Education in Australia, 1982 (ABS, 4214.0)*. Tables 14 & 15, p. 15.

The Role of Governments

Supply of post-compulsory education is largely determined by government funding -- the State governments through their school education systems, the State and (more recently) the Commonwealth government through the TAFE colleges, and the Commonwealth through the universities. Alternative providers exist at the margins or in a context largely set by government provision -- the non-government schools, two or three relatively small private universities, and a more substantial group of private providers in the area of employment skills (mainly office and computer skills). Apprenticeships and traineeships stand apart in this regard. Their supply is more dependent on the willingness of employers to take on apprentices, although here too, government subsidies to employers play a role.

In school education State governments have generally accepted all students who wished to enrol in Years 11 and 12. In both higher education and vocational education and training, government funding has been influenced by perceptions of *unmet demand* -- and there have been indications that at times supply has not kept pace with demand (AVCC,

1993; Deveson, 1990: 39). The reintroduction of user-pays principles into higher education in 1989, embodied in the *Higher Education Contribution Scheme*, was designed to minimise any adverse effect on demand.

Governments have also sought to change the nature of educational provision to both accommodate and encourage increased educational participation. State governments have undertaken reviews of curriculum and assessment in senior secondary schooling to better meet the needs of a broader student population. The Commonwealth and State governments have been active also in the creation of new forms of training, particularly with the introduction of traineeships, but more generally with a series of changes to the vocational education and training sector.

Programs of student financial assistance might be expected to contribute to demand for education. A recent study suggested that the percentage of students from relatively disadvantaged backgrounds continuing past Year 10 had increased over the period 1989-93 by 3.5 to 4.0 percentage points due to the introduction of AUSTUDY in 1987 (Dearden & Heath, 1996) -- which might translate into one or two percentage points in aggregate. The identification of the effects of AUSTUDY on participation is difficult because it *replaced* programs such as the Secondary Allowance Scheme and the Tertiary Education Assistance Scheme and was concurrent with changes in youth unemployment benefits. Chapman (1992), for instance, was not able to find clear evidence of an increase in higher education participation as a result of the introduction of AUSTUDY.

Changes in the Demand for Labour

Australia is not alone in having experienced a substantial increase in educational participation. It is a common feature of all industrialised countries (OECD, 1998). The increased importance of education and training is often explained by the movement towards more knowledge-based economies. As production processes becomes more dependent on the knowledge and skills of the workforce, the importance of education and training increases.

Education and the Labour Market

A recent OECD report summarises the evidence on the labour market outcomes for individuals from their initial education and training:

> Educational attainment is positively related to individual performance in the labour market. Those with higher levels of education are more likely to participate in the labour market, face lower risks of unemployment, and receive on average higher earnings. (1998: 54)

Table 4 shows the unemployment rates for Australian males and females with different levels of educational attainment. There is a clear pattern of lower levels of unemployment for those with higher levels of educational attainment. The differences are often quite large -- for instance, the unemployment rates of persons who had not completed the highest level of secondary school and had no post-school qualifications were more than four times higher than for persons who had completed a bachelor degree.

Table 4 Unemployment Rate and Educational Attainment by Gender: Australia, 1997

Educational Attainment	Unemployment Rate		
	Males %	Females %	Persons %
With a Post-School Qualification			
Bachelor degree or higher qualification	3.2	3.9	3.5
Undergraduate diploma	4.3	4.8	4.6
Associate diploma	3.7	6.7	5.0
Skilled vocational qualification	5.9	7.2	6.1
Basic vocational qualification	8.7	8.5	8.6
Without a post-school qualification			
Completed highest level of secondary school available	9.4	8.3	8.9
Did not complete highest level of secondary school available	13.4	11.4	12.5

Source: *Transition from Education to Work Survey, May 1997*, Table 4.17 in ABS (1998) *Education and Training in Australia*, Cat. No. 4224.0, 40.

There are also earnings benefits from education. For those with some income from employment and aged between 25 and 64 in 1995, compared with Australian males with below upper secondary education, those with upper secondary education earned 5% less, those with non-university tertiary education earned 12% more and those with university education earned 53% more (OECD, 1997: 265). The corresponding values for females were increases of 15%, 21% and 60%.

It is these kinds of benefits that, in part at least, provide the motivation for undertaking further education and training. The economic benefit of education, however, either to the individual or society, cannot be measured solely by such values. Issues such as the costs of education (including opportunity costs), the selective nature of persons with different levels of educational attainment (whether further education is adding value), and externalities need to be considered. When examining the benefits that might result from *increased* levels of education, it is not average differences that are important but rather marginal changes to benefits -- and such marginal changes are likely to be smaller than average benefits.

Changes in the Occupational Structure

Changes in the occupational structure of the Australian workforce have led to an increase in demand for skilled labour. Employment patterns have shifted in response to technological change, microeconomic reform and globalisation. In terms of employment share by industry, there has been a decline in the relative importance of manufacturing and an increase in the relative importance of the service sector. Changes in the occupational distribution of the labour force have resulted from this shift in production.

There are several studies detailing an occupational shift towards a more skilled workforce in Australia. Borland and Foo (1994) found that for the period 1952 to 1987 there had been an increased demand for skilled labour and attributed this to technological change. Maglen and Shah (1999) show annual growth between 1987 and 1996 of 1.4% for managers and administrators, 3.2% for professionals, 1.0% for para-professionals, no growth for tradespersons, 0.8% for clerks, 3.6% for sales and personal service workers, 0.6% for labourers, and negative growth for plant and machinery operators and drivers (p. 18). Their results point to a bifurcation of skill requirements with growth of employment in relatively highly skilled and in lower skilled areas.

Workforce 2005 (DEET, 1995) detailed the implications for employment and skills formation for the decade 1996-2005 of existing demographic, educational, social and economic trends and likely technological and economic developments. While it predicted that new jobs created during the coming decade will require a more skilled workforce, it also noted likely growth in areas of lower skilled employment:

> In general, more highly skilled occupations will experience strongest growth in new jobs, with the less skilled occupations, such as labourers and machine operators, experiencing comparatively low rates of growth. There are however many exceptions to this general statement. Employment of sales workers, for example, most of whom would not be classified as highly skilled, is projected to grow strongly owing to the increase in consumer demand as a result of the growth of the national economy (p. ix).

Changes in the Rate of Return to Investments in Education

Increased educational participation such as has occurred during the 1980s and the 1990s could have eroded the labour market benefits associated with higher levels of educational attainment. This section examines whether the increased levels of educational attainment of the workforce matched the increased demand for skilled labour, fall short of that demand, or exceed it. The evidence is based on inferences from earnings -- if the supply of categories of skilled workers matches the demand for workers with those skills, relative earnings will be maintained, if the supply is less than the demand, relative earnings will increase, and if supply exceeds demand, relative earnings will decline.

Australia's Workforce 2000 suggested that demand for more skills would exceed supply, even given the growth in educational participation. By the time of its sequel, *Australia's Workforce 2005*, the expectation was that the increased skill base of the workforce would, in aggregate, simply keep pace with the increased skills requirements of the changes in the occupational structure.

Higher Education. There are indications that returns to higher education, in particular, may be falling. *Australia's Workforce 2005* notes that:

> The employment destinations of many workers holding qualifications, particularly those in some fields of study delivered by the higher education sector, are projected to widen over the next decade (DEET, 1995: xi).

Results from the higher education *Graduate Destination Survey* suggest that recent higher education graduates had widened their occupational destinations between 1989 and 1997

(Andrews & Wu, 1998). It may be that graduates have become progressively more likely to enter occupations that do not match their skills as well and that are less well rewarded.

The *Graduate Destination Survey* also provides opportunities to examine changes in the starting salaries of higher education graduates. The median starting salaries of young recent degree graduates fell from being about the same as average weekly earnings in 1977 to about 85% of average weekly earnings in 1989 (Coyte & Guthrie, Guthrie & Coyte, Guthrie, various years). Chia (1989), however, found that there was no sign of decline during the 1980s if the starting salaries of young graduates were compared to the earnings of people in full-time employment of a similar age -- there was a difference of about 20% in favour of recent graduates in 1977 and in 1990. Andrews and Wu (1998), however, report that the starting salaries of all first-degree graduates had fallen in the period 1990 to 1998 compared to an age-weighted average of the earnings of all full-time employees.

There has been extensive analysis of returns to education in Australia using cross-sectional age-earnings profiles. Using the 1975 Census (Miller, 1982) found that the internal rate of return to formal education exceeded 20 per cent in some instances. Analyses of ABS Income Distribution Surveys suggested that the marginal rate of return to a university degree had fallen during the 1970s from 24.0% in 1968-69 to 22.4% in 1973-74 and to 19.4% in 1978-79 (Miller, 1984). Chia (1989) extended these analyses and found that the rate of return for a degree fell to 18.3% in 1981-82 and to 16.8% in 1985-86. Gregory (1995) also found that returns to university degrees had fallen between 1968 and 1990. Nevile and Saunders (1998), however, suggest that changes in earnings associated with degrees have been confounded with employment patterns in the private and public sector. They found that the earnings premium associated with degrees (compared with Year 12, no further qualifications) *increased* by about a half in the private sector during the 1980s. Bowman (1987), however, raised serious concerns about whether such cross-sectional analysis accurately reflects cohort changes. Chia, following Bowman, concluded that 'the comparison of cross-sectional rates of return over time appears to be a dangerous practice which could lead to conclusions which are wrong not only with respect to *magnitude*, but also with respect to *direction* of change' (1989: 10).

Early School Leavers. Karmel (1998), in the context of examining the demand for secondary schooling, found that:

> . . . the earnings premium from having a level of educational attainment equivalent to completing school or higher increased in the 1980s after declining in the 1970s. Estimates of shift in demand, based on the movements of relative earnings, suggest that demand for persons who were early school leavers fell very substantially in the 1970s and 1980s. (p. 2).

During those two decades, however, early school leavers have become an increasingly small minority and their educational and other characteristics have changed accordingly. The decline in relative earnings may in part reflect that change. Nevertheless, the decline in the relative earnings of early school leavers implies relative improvements in the earnings of other, more skilled, categories.

Vocational Education and Training. Analysis of the earnings effects of, and returns to, non-university post-school qualifications is difficult because of the diversity of courses. TAFE qualifications range from one-semester certificates to three-year diplomas and correspond to a very broad range of occupational destinations. Typically studies (including the present study) have grouped the many different qualifications into one or two broad categories. Changes over time in the proportions and nature of the different qualifications that comprise such broad categories make results difficult to interpret.

The OECD (1997) results cited earlier refer to the earnings of the category of persons with *non-university tertiary qualifications.* Those values suggested an earnings advantage of 12% for males and 21% for females compared with those who left school before Year 12 and did not obtain any other qualifications. Given the diverse grouping of qualifications within this category, it is likely that some of the qualifications have higher, and some lower, effects on earnings.

The diversity is shown by McKenzie and Long (1995) who used the 1993 *Survey of Training and Education* to investigate the earnings effects of educational qualifications for full-time employees. For males, they found that, after controlling for age and country of birth, the usual weekly earnings of an employee with an Associate Diploma were higher by 18% of average weekly earnings, 7% for a Skilled Vocational Qualification (Apprenticeship) and 11% for a Basic Vocational Qualification. The corresponding values for female employees were 16% for Associate Diplomas and Skilled Vocational Qualifications, 10% for Year 12 completion and 12% for Basic Vocational Qualifications.

Apprenticeships. Several studies have examined the effects of apprenticeships on earnings. In a review of research conducted during the 1960s and 1970s Blandy *et al.* suggested that 'lower-level post-secondary courses are probably a better investment at present than degree or diploma courses' (1979: 142). Miller (1982) also concluded that the rates of return to trade qualifications were high relative to most other forms of post-school education. Long *et al.* (1996) found that the take-home earnings of young workers who had completed apprenticeships were about 10% higher than early school leavers, but little different from Year 12 graduates. Marks and Fleming show consistent positive hourly earnings effects for young males and females of between 5% and 17% for apprenticeships (1998b: 33), but the size of the effect declined with age. These effects tended to increase during the 1980s for males, but decrease for females. McGuire (1994) reported changes over the 1955 to 1990 period in the estimated returns to apprenticeships for persons remaining in the metals industry in New South Wales. Although the estimated returns were lower than those found by Miller (1982) for trade qualifications in general, they still ranged from 17 to 26 per cent. This indicated that 'apprenticeship appears to be a profitable investment yielding considerably higher returns than most investments in physical capital' (McGuire, 1994: 247).

On the other hand, Hatton and Chapman's (1989) analyses of the 1973 ANU Social Mobility Survey indicated that 'the rate of return on apprenticeships and trade training was probably no higher than other forms of post-school training and may have been somewhat lower' (p. 149). Dockery and Norris (1996) found that the incomes of men in

four out of ten trade occupations were lower than for unqualified workers. Among females, the average earnings of most tradespersons were lower than for unqualified workers.

Other TAFE Courses. Somewhat less evidence is available about the earnings effects of non-apprenticeship TAFE courses, and little about changes over time. Indeed TAFE courses are rarely identified as such in the literature -- diplomas, associate diplomas and even certificates straddled the higher education-TAFE divide for much of the period covered by this report.

Gregory (1995) found that the returns to non-trade diplomas have fallen between 1968 and 1990, but that they are substantially higher than returns to degrees and (non-trade) diplomas. Long *et al.* (1996) found that the take-home earnings of non-apprenticeship TAFE graduates were about 10% higher than those who had not completed Year 12, but little different from those of Year 12 graduates. Marks and Fleming (1998b) found that other-than-higher-education qualifications were of little long-term advantage in earnings.

The interpretation of the earnings effects of vocational education and training qualifications, however, rarely considers the issue of the relative comparative advantage of persons with different talents for different occupations. In a paper on the role of self-selection in the demand for, and outcomes of, education, Willis and Rosen note that:

> . . . plumbers . . . may have very limited potential as highly schooled lawyers, but by the same token lawyers may have much lower potential as plumbers than those who actually end up choosing this kind of work. This contrasts with the one-factor ability-as-IQ specifications in the literature which assume that the best lawyers would also be the best plumbers . . . (1979: S11).

The use of the concept of comparative advantage might help reconcile the findings of apparently poor returns from vocational education and training with results from studies such as the 1997 *TAFE Graduate Destination Survey* (NCVER, 1998) that show positive labour market outcomes associated with completion of a range of vocational education and training courses in Australia.

Changes in the Youth Labour Market

The changes in the broader labour market have altered the employment opportunities of young Australians. The youth labour market has been characterised by three major changes in the last three decades: an increase in unemployment, a decline in the labour force participation rate, and an increase in the relative importance of part-time employment. As the results in Tables 2 and 3 suggest, employment and education are likely to be related. Employment is an alternative to education and training, a source of training opportunities, a source of finance for education and an often hoped-for outcome of education and training. The youth labour market may also be affected by changes in educational participation. As participation in (particularly) full-time education increases, the characteristics of those available for full-time employment are likely to change -- particularly in terms of their schooling outcomes -- and so too will the demand for part-time work which can be more easily accommodated with full-time study.

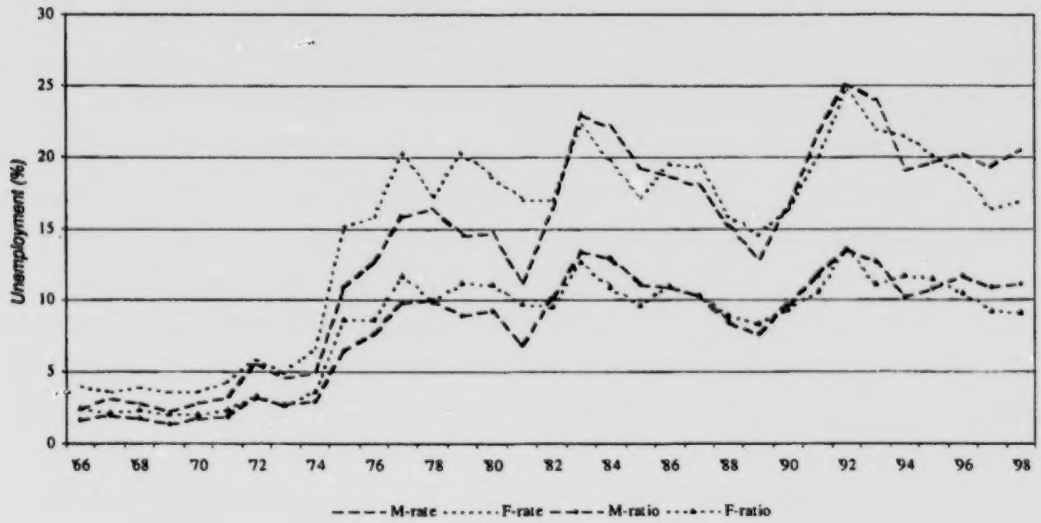

Figure 7 Unemployment Rates and Unemployment Ratios by Gender: Persons Aged 15 to 19 Years, Australia 1966-1998

Source: *Labour Force Survey*. ABS Cat. No. 6101.0.

Youth Unemployment

Youth unemployment has increased substantially in the last 30 years. Figure 7 shows the unemployment rates (unemployed persons as a percentage of the labour force) and unemployment ratios (unemployed persons as a percentage of the population) for males and females aged 15 to 19 years from 1966 to 1998. The unemployment ratio is sometimes the preferred measure when labour force participation rates are also changing -- as they are for these data.

Regardless of the measure, the overall pattern is similar -- youth unemployment rates were under 5% during the 1960s and early 1970s and then increased rapidly during the 1970s to over 15% where they have remained. Within this trend there are peaks and troughs which correspond to the changes in the overall level of economic activity -- 1983 and 1992, for instance, were years of particularly high levels of youth unemployment. After the initial increase, there also appears to be a tendency for successively higher peaks of unemployment followed by higher troughs -- a continuing upward trend around which unemployment rates vary with the business cycle.

Given the higher levels of youth unemployment, study and training could become a more attractive proposition. The opportunity cost of study is reduced -- the choice is no longer between study and work but between unemployment (or uncertain and interrupted work) and study. It is not clear, however, that the expectation of a positive relationship between unemployment and educational participation is fully supported by the observed patterns

of unemployment and participation in education. Unemployment rates and certain forms of post-compulsory education (Year 12 completion and higher education in particular) have increased during the past three decades and hence the overall relationship is positive. If, however, we look at the detail of the relationships, the expected co-relation is not always evident. Consider, for instance, male unemployment rates and male Year 12 retention during the 1970s (Figures 7 and 1). Year 12 retention for males was lower in 1982 than it had been in 1972, yet unemployment rates for males had at least tripled during that time. This is hardly consistent with the view that increasing youth unemployment was the motor for increasing levels of school retention. Indeed at the time these observations led to the suggestion that higher levels of unemployment lowered school retention -- the 'get a job while you can' syndrome (Merrilees, 1981; CTEC, 1982; Sloan & Wooden, 1984; Miller & Volka, 1989). Further, from the 1980s onwards there was initially a consistent increase in school retention for males and females and then, from 1992, a consistent decrease until 1997. Yet the corresponding values for unemployment rates show no such stability.

Despite these patterns, Karmel (1996) was able to demonstrate a positive effect of increases in unemployment rates on Year 10 to 11 and Year 11 to 12 grade progression rates for both males and females. He argued that Year 12 retention is the sum of grade retention over several years of post-compulsory schooling and was therefore insufficiently sensitive to labour market conditions in any given year. Instead he focused on changes in the likelihood of students remaining at school for an additional year given that they had already participated in Year 10 or Year 11 and found that increases in unemployment are associated with increases in grade progression.

These results are consistent with the work of Merrilees (1981), Mattila (1982), Raffe (1987) and Raffe and Willms (1989) who all found a relationship between school retention and the labour market. Chapman (1992) showed that employment ratios, among other variables, predicted participation in secondary schooling for 16- and 17-year-olds, especially for males, but the relationship was not particularly strong.

Interestingly, however, Karmel found no effect of *decreases* in the unemployment rate on school retention and found a negative effect of the absolute level of unemployment on the Year 10 to 11 progression rate for females.

If a relationship can be found between school retention and youth unemployment, then it should be possible to find a relationship between apprenticeship commencements and unemployment rates -- at times of low business activity and higher unemployment, employers may be unwilling to take on apprentices. Comparison with the pattern of apprenticeship commencements in Figure 4 shows the expected relationship with unemployment -- when youth unemployment increased in 1981-82 and in 1990-91, apprenticeships commencements declined.

The effect of unemployment on the transition from Year 12 to higher education and on participation in TAFE and higher education is less obvious, although we might expect that changes in opportunities in the labour market would affect demand for further education and training.

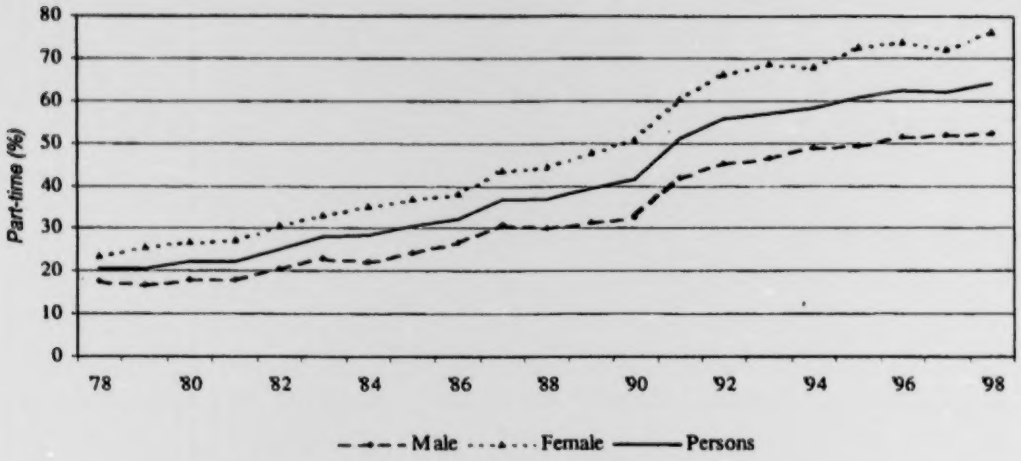

Figure 8 Part-time Employment as a Percentage of Total Employment by Gender: Persons Aged 15 to 19 Years, Australia 1978-1998

Source: *Labour Force Survey*. ABS Cat. No. 6101.0.

Part-time Work

Not only has youth unemployment increased during the past three decades, but youth employment has also changed. Figure 8 shows the increase in the percentage of employment that is part-time. The percentage of teenage employment that was part-time increased from just under 20% in the late 1970s to just under 60% by the late 1990s.

The relative increase in the importance of part-time employment in the youth labour market could contribute to the increase in participation in post-compulsory education. If the increase in part-time employment is an aspect of the deterioration of the youth labour market, to the extent that poor labour market conditions contribute to educational participation, the increase in part-time employment will lead directly to higher levels of participation. The lack of full-time jobs makes educational participation a more attractive option. Second, the increased availability of part-time employment may facilitate educational participation -- students have greater access to employment that meets their need for earnings and their need for time to study. Third, part-time work lowers the opportunity cost of education -- students are less likely to face an either/or choice between education and work. On the other hand, the growth in part-time employment may reflect a greater need by students to supplement their income. If this is the case, it signals the fact that educational participation has become more difficult financially and only expanded despite these difficulties.

The research in the area is not conclusive. Robinson (1999) examined the proposition that part-time work might provide a diversion from schoolwork and lead to a lower likelihood of school completion. She found that Year 11 students who were employed for more than 10 hours per week were slightly less likely to complete Year 12 and that

Table 5 Average Gross Weekly Income (1989$) by Income Deciles: All Households, 1984, 1988-89, 1993-94

	Average Gross Weekly Income Deciles										All
	1	2	3	4	5	6	7	8	9	10	
1984	121	209	282	395	497	608	735	879	1075	1642	644
1988-89	110	196	273	381	485	597	724	873	1067	1683	640
1993-94	107	187	256	341	438	556	688	838	1038	1667	613

Source: *1993-94 Household Expenditure Survey, Australia. The Effects of Government Benefits and Taxes on Household Income.* ABS Cat. No. 6537.0. Values are in January 1989 dollars.

their end-of-school results were a little lower. If this is a causal connection, it could imply that the increased availability of part-time work leads to lower levels of Year 12 completion.

The analyses of time-series data by Sloan and Wooden (1984) showed a positive relationship between part-time employment in one year and school retention in the subsequent year for 15 year olds, but a negative association for 16 and 17 year olds. They suggest that the former is evidence that part-time employment provides a source of finance for continued schooling, and that the latter shows that the level of part-time employment is an indicator of the state of the labour market -- although why these explanations should differ across age groups is not clear. Forster and Ryan (1986), on the other hand, used pooled cross-sectional time series data and found a positive association between part-time employment and school retention for 16-year-olds.

There have also been studies of the effect of part-time employment in school on the transition to further study. Results from the *Australian Longitudinal Survey* (Prior and Beggs, 1989) showed a negative effect of part-time employment in school on the likelihood of entry to a tertiary institution for females. Wooden *et al.* (1992), using more recent data from the *Australian Youth Survey*, found a negative effect of part-time employment in school on the likelihood of the transition from Year 12 for males. It is difficult to reconcile these findings. Wooden *et al.* also found that working part-time did not have a significant effect on retention within higher education.

Family Support

Families are a major source of financial support for the continued participation of young people in education. As a minimum, this support consists of accommodation and food, but often a great deal more. Increased incomes of families over recent decades might be a source of increased educational participation. The values in Table 5, however, do not support the proposition that there has been an increase in real household incomes, at least in the decade 1984 to 1994. Harding and Szukalska (1999), however, suggest that there are major problems with the ABS 1994-5 income survey -- that the survey was biased towards income units with no or low income. Their work indicates a drop of about a third in before-housing child poverty during the period 1982 to 1995-96, largely as a result of the very substantial increases in government cash payments to lower income families with

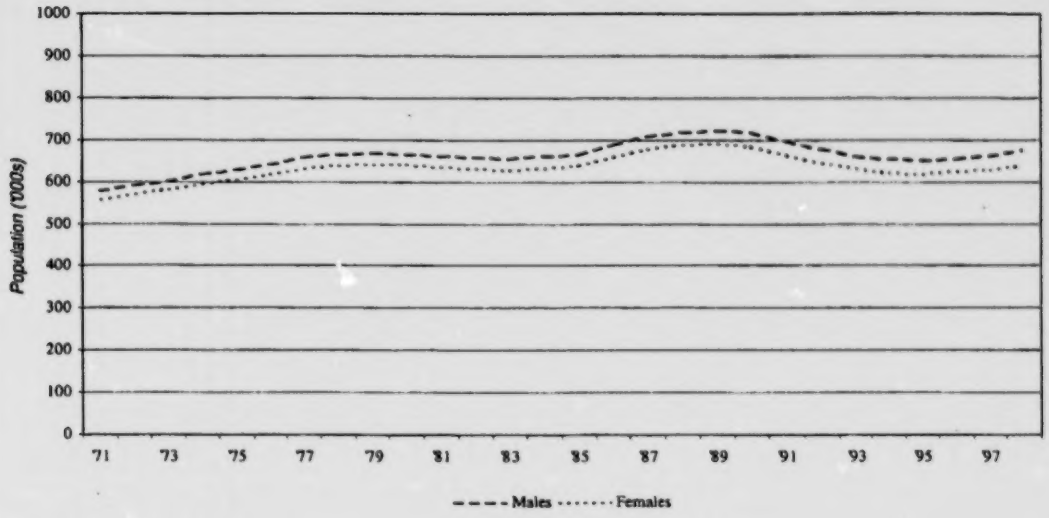

Figure 9 Estimated Resident Population at 30 June by Gender: Persons Aged 15 to 19 Years, Australia 1971-1998

Source: *Population by Age and Sex* (ABS, 3201.0)

children -- a change that means that more families would be better able to support their children while they undertook post-school education and training.

Changes in family structure may have increased the ability of families to pay for more education for their children. There has been a consistent decline in fertility rates in recent decades, from an expected 3.4 ex nuptial births per woman in 1956-60 to 1.9 in 1986-90. For the period covered by the cohorts in this study, fertility declined from 3.3 births in 1961-65 to 2.5 in 1971-75 -- a decline of about 25%. Australian families have become smaller. Even if family resources had not increased, the available resources could be expended on fewer children. The tendency for women to have children at a later age may also mean that children are more likely to be born into families with more resources. The ability to support more participation in education and training may be a consequence.

Cohort Effects

Educational participation rates are the result of two values -- the number of persons participating in a given form of education and the number of persons in the population. The major emphasis in the discussion of changes in participation rates is on the numerator. It is, however, conceivable that participation rates could change in response to changes in the denominator -- a sudden increase in the 15 to 19 year-old population could strain the existing educational infrastructure, or a sudden decline in the age population might mean that more resources or training opportunities are available to support higher relative rates of educational participation. This was certainly an argument advanced in a House of Representatives report in relation to the funding of increased Year 12 retention (Brumby, 1989).

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Figure 9 shows that the 15 to 19 year-old population has not increased uniformly in the period 1971 to 1998. The population was reasonably stable through the late 1970s to the mid 1980s, before increasing to a peak in 1989 and declining again. The changes are really quite large -- from 1979 the 15 to 19 year-old population declined by 2.2% to 1983, then increased by 10% to 1989 before declining by 10% to 1995. The fact that the values are averages of the 15 to 19 year-old population means that the size of the fluctuations for single age groups is under-estimated. Differences in the age-grade profiles of school students among the States and Territories, however, probably reduce the effects of any extreme fluctuations on post-school participation in education and training.

Karmel (1996: 10) notes that it has been argued that cohort size will affect educational choice through its impact on the rate of return to education. Given the pattern of change of the Australian 15 to 19 year-old population, with increase and decrease over a period that coincided with sustained growth in educational participation, it is difficult to claim that there is a strong effect. Certainly Karmel failed to find any effect on school participation -- though cohort effects on schooling are possibly the least likely of any of the possible effects on compulsory education.

Summary

This chapter has reviewed some of the possible causes of the increases in educational participation that have occurred in Australia in the 1980s and 1990s. The major force behind the increase in educational participation has been the increased demand for occupations requiring higher levels of education and training. The increased demand is a consequence of technological change, microeconomic reform and globalisation. Increased demand for skilled labour has allowed the increase in educational participation to proceed with few, if any, indications of a decline in the personal economic benefits associated with educational qualifications. The substantial decline of full-time employment in the youth labour market and the growth of part-time employment may mean that there is both less opportunity to leave education for full-time employment and greater opportunity to find employment to support full-time study -- although the evidence on these issues is sometimes mixed.

The increase in educational participation has been facilitated by changes in educational policies and programs that have recognised the need for greater diversity in educational provision to accommodate the broader student base participating in educational and training programs. Increased aggregate funding by governments for post-compulsory education (and the facilitation of payment by students for their higher education through HECS) has allowed the supply of educational opportunities to respond to the increase in demand for places in TAFE colleges and universities.

Parents have also been better able to support their children's participation in education and training. Although there is little evidence of a substantial increase in household earnings during the period of growth in educational participation, there are suggestions that fewer children were living in absolute poverty. The smaller number of children per family may also have resulted in an increase in the capacity of families to support each child for longer periods of education and training.

4. EQUITY, SUBGROUPS AND STATISTICS

This chapter deals with generic issues about the interpretation of the results presented in the following chapters. The results are presented in tables with a standard format. Discussion of that format at the outset will prevent repetition within each chapter. The format of the tables and the meaning of the entries contained in the tables are the subject matter of this chapter.

The Tables

There are several standard features to the tables:

- There is a separate table for each characteristic discussed in this report -- gender, parent's occupation, parental education, family wealth, rurality, State, early school achievement and type of secondary school attended. Comparisons are therefore made between the sub-groups of these characteristics -- males and females, and so on.
- Each table contains seven panels labelled from A to G for ease of reference in discussion. Panels A to F correspond to the six forms of educational participation as indicated in the table and Panel G presents the weighted sample sizes.
- Each table presents Year 12 completion and educational participation rates at the age of 19 for four cohorts -- persons born in 1961, 1965, 1970 and 1975 who would have been 19 years old in 1980, 1984, 1989 and 1994 respectively. Discussion therefore focuses on changes in rates of educational participation among the sub-groups in the table.
- For each cohort, three sets of percentages -- labelled *0, 1* and *2* -- are shown. Those in the column labelled *0* are observed percentages, those in the column labelled *1* are observed rates adjusted to account for differences in participation attributable to other variables, and those in the column labelled *2* are similar to those in column *1* except that additional variables are used in the adjustment process. In discussion, the values in columns 1 and 2 are referred to as the *first* and *second adjusted values* respectively.

A standard set of notes that describe that tables is provided at the end of this report.

The Model and Adjusted Values

The analyses presented in this report are structured by an understanding of the way in which the family and personal characteristics of respondents, their educational experiences and attitudes and expectations while at school, and Year 12 completion and immediate post-school educational participation are related. This understanding is presented in Figure 10.

The two adjusted values in the tables correspond to the blocks of variables in Figure 10. The first set of adjusted values have had the effect of the variables labelled *Family & Personal Characteristics* removed, the second set have been adjusted for both *Family & Personal Characteristics* and *School Experiences & Post-school Expectations*.

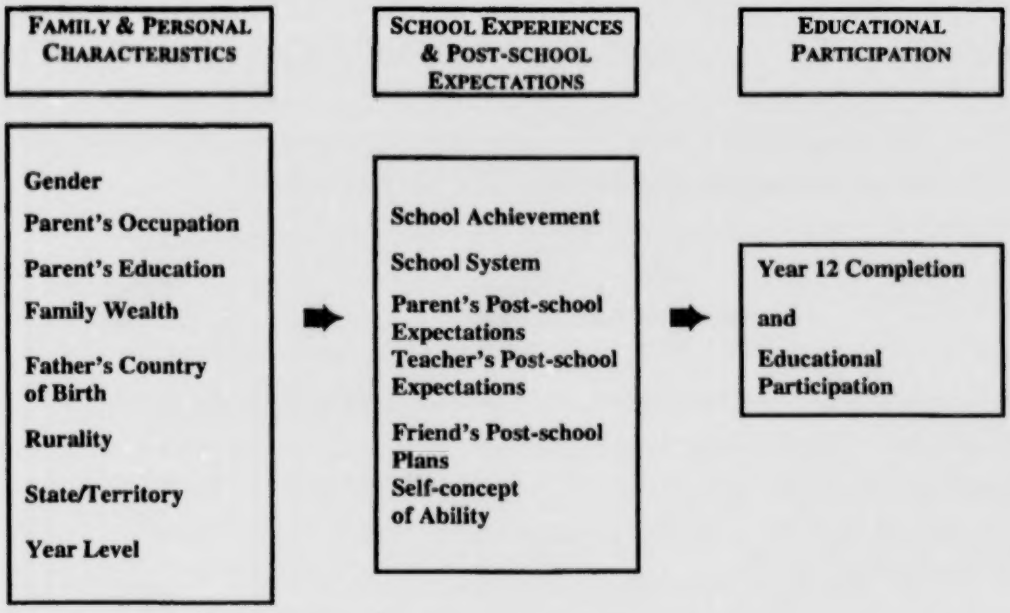

Figure 10 Simplified Model Underlying the Analyses

The adjusted values both isolate the unique effects of a given characteristic on educational participation and map the mechanisms by which any effect on educational participation is transmitted. Consider for instance, the possible effect of father's country of birth (*ethnicity*) on Year 12 completion. Assume that the following hypothetical values are observed (actual values are presented in Chapter 7) -- an overall Year 12 completion rate of 70% and completion rates of 65% for respondents with a father born in Australia (*Australian-born*) and completion rates of 80% for respondents with a father born in a mainly non-English speaking country (*Non-English-Speaking born, NESB*).

This difference might reflect no more than differences attributable to other background characteristics -- perhaps NESB respondents are advantaged in terms of family economic background or happen to live in States with high levels of Year 12 completion. If this were the case, then when we adjusted for those factors, the difference associated with ethnicity should decline. After the first level of adjustment, the Year 12 completion rates might be 69% for Australian-born and 72% for NESB. We could then conclude that there was no direct effect of ethnicity on Year 12 completion -- the observed difference was due to confounding factors. Young NESB people would still have a higher rate of Year 12 completion -- but that higher rate is not because they are NESB. Alternatively, the adjusted values might show little change -- perhaps only to 66% and 78%. We could then conclude that the differences are indeed mostly attributable to ethnicity *per se* and not to some associated background characteristic.

The second level of adjustment is principally about the way in which differences are transmitted. Consider again the example of ethnicity and first adjusted values of 66% and

78%. The second level of adjustment might change the values to 69% and 72% respectively. We could now say that the difference in Year 12 completion associated with categories of ethnicity (which is a real difference) occurs because of differences in school experiences or post-school expectations -- although not necessarily which experiences or expectations. This does not alter the fact of the influence of ethnic background on Year 12 completion -- it merely points to how it works. Alternatively, the second level of adjustment might still leave a large difference. In this case, the difference is not due to any combination of school experience or post-school expectations -- it is unexplained and directly attributable to ethnicity.

There are two necessary conditions for statistical adjustment to have any effect. First, the variable of interest must be related to the adjusting variables, and second, the educational outcome must be related to the adjusting variables. Gender, for instance, is unrelated to socio-economic background (or most other background characteristics) -- girls are as likely to come from poor families as are boys. Hence, the first level of adjustment will have little affect on most gender differences, even though variables used to make the adjustment may be strongly related to educational participation. Second, the variables used to make the adjustment must be related to educational participation. TAFE (Non-apprenticeship) participation, for instance, is related to relatively few background characteristics. Hence controlling for those background factors will have little effect on any observed differences.

There are limits to the efficacy of statistical adjustment. There are two requirements for its success. First, that all the pertinent variables are included -- and we have most of the prime suspects when it comes to factors affecting early post-school educational participation. Second, it requires that the variables be measured well -- that the variables capture all of what is meant by, say, rurality or parental education. This is something that is difficult to achieve with relatively few categories or only one measure of a given concept.

The Meaning of Equity

The concept of inequality plays a dual role in economic theory (Breen, 1997). On the one hand, it is assumed that social mobility within a society like Australia is necessary in order to make the best use of the nation's resources -- the wasted talent argument. On the other hand it is also assumed that inequality in occupational rewards is necessary in order to provide an incentive for people to work harder and contribute to economic growth. High levels of inequality, however, restrict rates of social mobility within a society. Hence there is a dilemma -- inequality and social mobility are both posited as good for economic performance, but one militates against the other.

Marceau *et al.* (1987) report World Bank research that shows a negative relationship between economic growth rates and income inequality. Rising inequality is generally associated with rising unemployment and there is evidence in Australia that rising unemployment reduces economic growth rates (Junankar & Kapuscinski, 1992) -- and rising income inequality may result in reduced access for many in the population to post-compulsory education.

The results presented in this report bear extensively on the extent to which there are inequalities in participation in post-compulsory education. The principal information presented in this report is Year 12 completion rates and various educational participation rates for different sub-populations -- and these rates invariably involve no more than percentages. For instance, to anticipate the results presented in the next chapter, Table 4 shows Year 12 completion rates for two sub-populations -- males and females. Panel A in that table shows that, for the cohort born in 1961, the Year 12 completion rate in 1980 was 37 per cent for females and 34 per cent for males. The conclusion follows directly that female students have a higher rate of Year 12 completion than males.

Inequality in school completion and educational participation rates between groups inevitably raise the question of fairness -- is it fair, for instance, that male students have lower school completion rates than female students? Answers to such a question involve fundamental assumptions about ethics, politics, social organisation and the nature of learning -- and much detailed argument (Sturman, 1997).

Questions of fairness can engage issues of fact. Male students may leave school without completing Year 12 because they have alternatives available to them, such as apprenticeships, that are not as widely available to female school students. That, presumably, would make any differences fairer in the eyes of most commentators (and in turn lead to the question of the fairness of access to apprenticeships). Or, it may be that there are better employment opportunities for males who do not complete Year 12 than there are for girls without Year 12. That might *explain* the differences in school outcomes for boys and girls, but does it necessarily make the *educational* differences fairer?

Empirical results can inform debate about fairness, but rarely resolve it. If, for instance, we found that boys left school because they did less well academically at school, would this justify the differences? If it is not universal, Year 12 completion should, in the eyes of many, be based on merit. And if merit (academic performance) just happened to result in differences in school completion associated with other characteristics such as socio-economic background, perhaps there is not an issue of fairness . . . except that we might want to ask about the sources of difference in academic achievement.

The slippery slope continues if we recognise differences in taste and preference. Perhaps males are less likely to continue with school because they do not like school as much as girls do. Do we then recognise the authenticity of their preferences? -- or demand that schools be changed and made more boy-friendly?

The observed school completion and education and training participation rates that are presented in the tables show the extent to which various categories of individuals are similar or different. The adjusted values assist with the interpretation of fairness or equity by allowing us to consider differences 'other (specified) things equal'. They do not, however, of themselves, resolve questions of fairness or equity.

Measurement of Equity

We are principally interested in differences among the educational participation rates of various sub-groups because we are interested in fairness. The measurement of these

differences, then, is not simply a technical matter -- it involves the extent to which equity is reflected by those measures.

For the sake of exposition, only, consider the situation where the overall Year 12 completion rate for a given year is 40%, and the rate for males is 35% and the rate for females is 45% (that is, there are equal numbers of males and females). There are at least three approaches to measuring the difference between males and females:

- Report that the difference is 10 percentage points. This is the *absolute percentage difference* between males and females for Year 12 completion.
- Report the ratio of female completion to male completion -- 45/35 is 1.29 -- females are 29% more likely to complete Year 12 than males. This is the *relative percentage difference* between males and females.
- Report the ratio of the odds of a female completing rather than not completing Year 12 (45%/55% = 0.82) to the odds of a male completing rather than not completing Year 12 (35%/65% = 0.54). The ratio of female to male odds (called the *odds-ratio*) is 0.82/0.54, which is 1.52. This rather convoluted measure has some convenient statistical properties that lead to its use being recommended for the analysis of percentages and rates (which are the basis of this report).

Rather than simply *differences* in school completion or educational participation rates, we are often interested in *changes in differences* -- are the differences between the Year 12 completion rates of males and females greater in 1994 than they were in 1980? Has equity increased or decreased? Again, for the purposes of exposition, consider a situation some years later where Year 12 completion has increased to 80% and the completion rate for males is 75% and the completion rate for females is 85%. The three measures give us different answers about whether the difference between males and females has increased, decreased, or is unchanged:

- The absolute percentage difference is *unchanged* -- it was 10 percentage points earlier and it is 10 percentage points in 1994.
- The relative percentage difference has *declined* -- it was 29% and is now 13%.
- The odds ratio has *increased* -- it was 1.52 and is now 1.89.

It is difficult to describe this illustrative change in Year 12 completion rates as an increase in differences among males and females (or as a less fair situation). Changes in odds ratios do not capture changes in what is commonly meant by equity -- and this has implications for the form of multivariate statistical analysis used to produce adjusted rates (this issue is discussed further in the Appendix).

The choice between absolute and relative percentage differences is a little more difficult, but we come down on the side of the use of relative percentage differences. One way of looking at the change is to note that the Year 12 completion of both males and females has increased by 40 percentage points. Whatever process generated this increase was therefore more equal than the process that created the original situation in which males and females had 35% and 45% completion rates. In our example then we have an initially

unequal situation, an (at least) equal change process, and the outcome should, on average be less unequal -- the answer provided by relative percentage differences.

Alternatively, we could just note that male Year 12 completion rates increased by 40/35 = 114% while female Year 12 completion rates increased by 40/45 = 89% and hence the Year 12 completion rates of males and females converged (although this begs the question a little by accepting measures of relative growth). Hence relative percentage differences give the appropriate answer.

There is, however, a problematic aspect to the use of relative percentage differences. Consider the complement of Year 12 completion, which we will term *early school leaving*. The changes in relative percentage differences for early school leaving suggest that the over-representation of males among early school leavers has increased. So, there are the apparently mutually inconsistent conclusions that differences between males and females have declined for Year 12 completion rates, but increased for early school leaving. We simply note that equity is usually defined in relation to some positive outcome, and in this case the positive outcome is Year 12 completion rather than early school leaving.

In our discussion of outcomes in the following chapters, therefore, we focus on changes in the relative differences among sub-population groups. On occasion, however, changes in absolute differences are noted.

Groups that are already advantaged have less scope for improvement than groups that are disadvantaged -- participation rates cannot exceed 100 per cent. Any movement towards mass or universal education will produce greater equity in terms of completion or participation. 'Gains in school retention are gains for equity' (Brumby, 1989: 6).

Sampling

The percentages in our tables are derived from samples -- hence they are subject to sampling variability. We need to know whether any differences in educational participation among categories is likely to be a real difference or just the result of sampling variability. There are complications when describing the sampling variability of the estimates presented in this report. The samples are stratified cluster samples (where the clusters were the schools in which the participants were originally contacted). The resultant design effects are difficult to estimate for the variety of statistics and comparisons we consider. Instead we note that the design effects are likely to be modest because of the small number of respondents per school and because we are generally interested in bivariate and multivariate relationships.

Table A1 in the Appendix presents estimates of the statistical significance of differences among categories for a given variable as a whole, rather than for the particular categories. The discussion and interpretation of results in the next several chapters use the values in this table to decide issues of statistical significance. This is a robust approach to the issue of sampling variability, but provides reasonable guidance on these issues. Sampling is discussed further in the Appendix.

5. GENDER DIFFERENCES

For several decades the equity policies of Commonwealth and State governments have emphasised the need for the improvement of the educational and labour market outcomes of young females compared with young males. These concerns can be traced through the publications of the Commonwealth Schools Commission including *Girls, School and Society* (1975), *Girls and Tomorrow* (1984) and the *National Policy for the Education of Girls in Australian Schools* (1986). The latter report was endorsed by all States through the Australian Education Council (AEC). The State governments themselves had for some time been concerned with gender differences in schooling and between 1975 and 1980 all States apart from Queensland had undertaken their own reviews of the education of females. These initiatives were followed by the AEC's *National Action Plan for the Education of Girls 1993-97* (1993) and MCEETYA's *Gender Equity: A Framework for Australian Schools* (1997).

Complementary policies were pursued in post-secondary education. The White Paper on Higher Education, *Higher Education: A Policy Statement* (Dawkins, 1988) recognised that females remained heavily concentrated in a narrow range of courses and disciplines within universities and that this was both a significant barrier to their full and equal participation in subsequent employment and a major source of structural rigidity and inefficiency in the economy. These themes were reiterated in *A Fair Chance for All: Higher Education that is within Everyone's Reach* (DEET, 1990).

Towards a Skilled Australia: A National Strategy for Vocational Education and Training (Australian National Training Authority, 1994), agreed to by the ANTA Ministerial Council, identified females as one of six target groups in need of improved access to, and outcomes from, vocational education and training. It noted that the needs of women had not always been recognised or incorporated into vocational education and training programs and delivery, and outlined programs to improve access for females. The most recent strategy document, *A Bridge to the Future* (Australian National Training Authority, 1998) similarly recognises the special needs of females through its endorsement of the *National Women's Vocational Education and Training Strategy*.

The educational and labour force participation of young males and females has changed substantially since the 1970s. The apparent Year 12 retention rate of young females has been higher than that for young males since 1976 and there has been a gap of at least 7 or 8 percentage points since the late 1970s (Figure 1). In 1997 the apparent Year 12 retention for females was 78% compared with 66% for males (ABS, 1997).

Figure 11 re-expresses the apparent Year 12 retention rates of males and females shown in Figure 1 as a ratio of the rates of females to males. A value of 100 corresponds to no difference between males and females, values greater than 100 corresponds to higher rates for females compared with males, while values less than 100 correspond to lower rates for females compared with males. Figure 11 shows that throughout the period of interest to this study, females have been between 15 and 20% more likely to complete Year 12 than males.

There is also evidence of good results for females in end-of-school assessments. McCann (1995) found that in the NSW HSC assessments, females out-performed males in English, Human Society and its Environment, LOTE, Creative Arts, and Health, Physical Education and Recreation. Results in Science were mixed, with females performing better than males in Biology and some lower level science options. Females also had better outcomes than males in Agriculture and Home Science. There was little difference in Computer Science. Males had higher results than females in Mathematics, Physics, Chemistry, Geology and four-unit Science, and Engineering Science and Technology. These results echo those found by Teese, Davies, Charlton and Polesel (1995) in a more comprehensive review of end-of-school assessments.

From the mid 1980s, even allowing for the transfer of nurse education from hospitals to higher education, entry rates of females from school to higher education were higher than those for males -- a gap that has continued to widen. Figure 11 shows the ratio of female to male higher education entry rates originally presented in Figure 2. By the mid 1990s, female Year 12 graduates were about 20% more likely to enter higher education than male Year 12 graduates. Further, once in higher education, completion rates seem to be higher for young females (Long *et al.*, 1995).

Participation of young females in vocational education and training (outside apprenticeships) has improved substantially in recent decades. Figure 11 shows that the participation in TAFE of 15 to 19 year-old females has increased from about 50% of that of males in the late 1970s to about 80% in the mid 1990s. Since some component of participation in VET is an alternative to school completion (rather than post Year 12 education) and females complete school at a greater rate than males, this is a strong result for young females. Further, recent results show that module completion rates in TAFE are higher for females than males (Ball, 1998).

Apprenticeships are a form of post-school education in which males have always been substantially over-represented. Figure 11, which is based on all apprenticeships (rather than those for 15 to 19 year-olds) shows that this changed only marginally during the 1980s and 1990s. The availability of traditional apprenticeships for 15 to 19 year-olds declined markedly in the early 1990s (Figure 4). The decline in the availability of apprenticeships might make young males (compared with young females) more likely to complete Year 12 and then move onto other forms of post-school education. There was no sign that this happened. Meanwhile, growth in *New Apprenticeships* has been in areas of training and employment, such as the retail and service industries, that have a tradition of female employment.

Results from the *Australian Youth Survey* indicate that the labour market experiences of young men and women differ according to their level of educational attainment. Among young people who do not complete Year 12, women tend to fare relatively worse than men: female non-completers are less likely to be in the labour force than male non-completers; they are more likely to work part-time; they are likely to work in a narrower

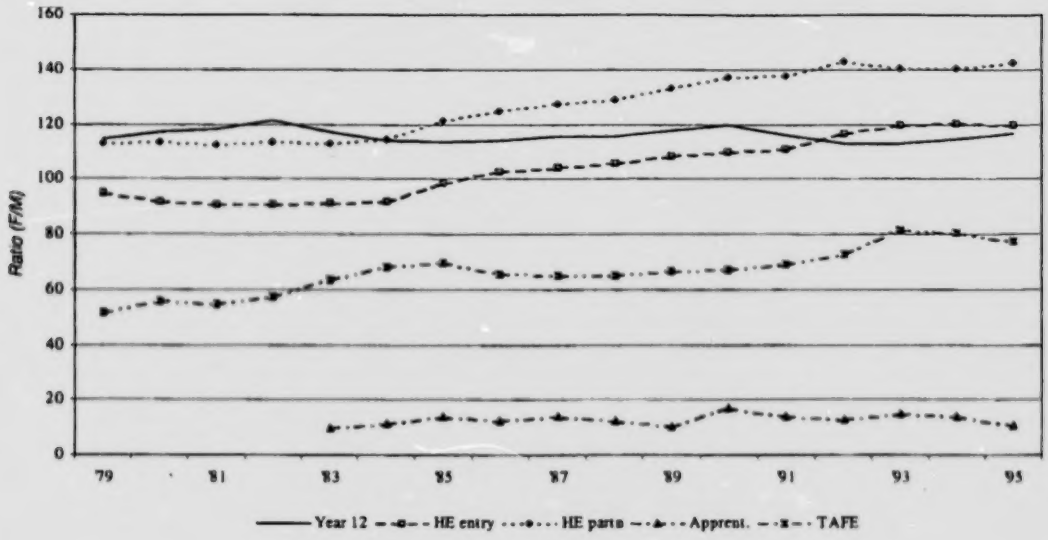

Figure 11 Ratio of Female to Male Participation Rates for Selected Forms of Education: Australia 1979-1995

Source: Based on Figures 1 to 6

range of occupations; and to experience lower earnings (Lamb *et al.*, 1998). International data indicate that in all countries for which longitudinal data are available, females who do not complete upper secondary education spend less time working in the first five years after leaving school than do males – and that this gender gap is relatively wide in Australia (OECD, 1998). Getting a good start in the labour market is important, and this seems to be relatively more difficult for young women who do not finish upper secondary school than for young men with a similar educational background.

Analyses of the *Youth in Transition Survey* suggest that the effect of Year 12 completion on lowering the likelihood of unemployment and increasing earnings is greater for young women than for young men. It was found that males were more likely to become unemployed and were less likely to exit unemployment than females, after controlling for post-school qualifications and labour market experience (Marks & Fleming, 1998a). Males earn more than females, other (measured) factors equal, which does imply systemic female disadvantage in the labour market (Marks & Fleming, 1998b). However, the effect of Year 12 completion on earnings is considerably greater for young women than for young men. Furthermore, the research also showed that the gender gap in earnings among well-educated young men and young women is narrowing over time. The rate of return to post-school qualifications tends to be greater for females than for males because higher qualifications open up proportionately more job opportunities for well-educated women compared to women who leave school early.

There is a contemporary dilemma in policies of gender equity. On the one hand, government policies for the past several decades have supported improved educational

and labour market outcomes for young females. These policies seem to have been very successful in education. At the same time, however, the effect of these improvements on labour market outcomes appears less certain. It is unclear whether this is simply an effect of lag -- that it takes time for the substantial improvements in educational outcomes for females to flow through into the labour market -- or whether there is something fundamentally flawed about the way in which these apparent educational gains for young females have been achieved and are translated into labour market outcomes.

Year 12

Panel A of Table 6 shows that female students have been more likely to complete Year 12 than male students throughout the period of this study. This is consistent with the results from the ABS in Figure 1 for apparent retention rates to Year 12. The initial percentage difference in the early 1980s was only three percentage points, but this grew to five percentage points in 1984, to seven in 1989 and to eight percentage points in 1994. Although the absolute difference in completion rates between male and female students increased almost uniformly from 1980 to 1994, the relative difference has more or less been maintained during this period.

The first level of adjustment makes no difference to any of the completion rates for male and female students for any of the four cohorts. This is to be expected -- male students should be no more nor less likely to come from wealthy families, to have parents with some post-secondary education, or to have parents in professional occupations, or to exhibit any of the other characteristics entailed in this adjustment. Hence there should be no change in gender completion rates after adjustment for these factors.

Adjustment for schooling and post-school expectations usually produces a small reduction in differences in school completion rates between male and female students. This pattern indicates the female students are somewhat advantaged in terms of these characteristics compared with male students -- when these advantages are removed, the differences are reduced. Although the changes are small, the initial gender differences are often relatively small as well. The net result is that gender differences virtually disappear after the second adjustment for most cohorts. This is not true, however, for the most recent cohort. There is residual difference of four percentage points showing a direct effect of gender on Year 12 completion, independently of any of the characteristics measured in this study.

The trend towards increasing Year 12 retention rates for females, relative to males is evident in ABS figures on apparent retention over the last three decades. This increase is consistent with the conclusion that the emphasis placed on gender equity in education has been effective. The duration of the trend, however, suggests that the increase may be the result of longer-term changes in Australian society, including changes in attitudes to sex roles which are also reflected in gender equity policies and programs. These policies and programs then act to legitimise and facilitate the increased Year 12 completion rates for females.

Table 6 Year 12 Completion and Selected Forms of Educational Participation by Age 19, by Gender: 1980, 1984, 1989 and 1994

Cohort born in . . .	1961			1965			1970			1975		
At age 19 in . . .	1980			1984			1989			1994		
Level of adjustment	0	1	2	0	1	2	0	1	2	0	1	2
	%	%	%	%	%	%	%	%	%	%	%	%
Panel A: *Year 12 Completion*												
Male	**34**	34	35	**34**	34	36	**52**	52	55	**74**	74	76
Female	**37**	37	36	**39**	39	38	**59**	59	56	**82**	82	80
Panel B: *Entry to Higher Education from Year 12*												
Male	**53**	53	52	**56**	57	55	**53**	52	54	**46**	46	45
Female	**47**	47	47	**43**	42	43	**50**	50	49	**51**	51	51
Panel C: *Higher Education Participation*												
Male	**20**	20	22	**19**	20	22	**27**	27	30	**34**	34	35
Female	**19**	19	18	**18**	17	16	**29**	29	27	**42**	41	40
Panel D: *TAFE (Non-Apprenticeship) Participation*												
Male	**11**	11	11	**14**	14	15	**18**	18	18	**19**	19	19
Female	**14**	14	15	**18**	18	18	**19**	19	19	**21**	21	21
Panel E: *Participation in Apprenticeships (inc. Traineeships)*												
Male	**34**	33	30	**35**	35	30	**30**	30	29	**23**	23	22
Female	**4**	4	7	**4**	4	9	**9**	9	10	**7**	6	7
Panel F: *Post-school Educational Participation*												
Male	**61**	61	58	**65**	66	64	**69**	69	71	**70**	70	71
Female	**37**	37	40	**48**	48	50	**61**	61	59	**65**	64	63
Panel G: *Sample Sizes*												
Male	1700			1298			815			1504		
Female	1733			1570			960			1711		

See *Notes to Tables*

Table 2 shows some strong gender differences in the reasons why young people complete or do not complete Year 12. When considering these responses it is important to recall that they represent different proportions of the cohort -- fewer males complete Year 12 than do females. The greatest difference was for *I wanted to do an apprenticeship*, not surprisingly given the reality of gender differences in apprenticeship participation rates. Males were also more likely to leave school because they had found a job or wanted to earn their own money -- responses that may be aspects of the attraction of apprenticeship. Males were also more likely to say that they didn't like school and that Year 12 looked like too much work. Interestingly, it was females who were more likely to give financial difficulties as an important reason for leaving school.

A Parliamentary Report on school retention, *The Restless Years*, asserted that 'The major reason for the difference is that more males than females leave school at Year 10 or 11 to take up employment or training opportunities (Brumby, 1989: 50). Apprenticeships, however, have not taken a greater proportion of each cohort through this period -- and if anything, the percentage of each cohort that has entered an apprenticeship has declined marginally (Lamb *et al.*, 1998). Further, those entering apprenticeships have increasingly completed Year 12. This may suggest that the educational outcomes for males have declined compared to those of females over the last 14 years, but leaves open the issue of whether they are in an absolute sense less than for females.

Year 12 completion is only one among a number of measures of school equity. Gender equity in subject choice in senior secondary school has been a long-standing concern. Females appear to be more likely to be enrolled in humanities and social science, art and mixed courses and less likely to be enrolled in mathematics-(physical)science and technology and applied courses (Ainley *et al.*, 1994). Regardless, this does not seem to hinder participation in post-school education and training but it does constrain the range of options available to females in post-school education and training.

Entry to Higher Education from Year 12

The educational equity policies pursued by Federal and State Governments during the last three decades have placed substantial emphasis on encouraging females to enter higher education -- particularly in areas of traditionally low female enrolments such as medicine and engineering.

The higher education entry rates in Panel B show that males moved from Year 12 to higher education at higher rates than females throughout the 1980s with only some limited signs of convergence towards the end of the decade. By the mid 1990s, however, female Year 12 graduates had higher rates of entry to higher education than males. Williams *et al.*, (1993), however, noted that the change in entry rates for males and females can be seen earlier in official enrolment figures and that the values for the 1970 cohort under-estimate this change. Re-analysis of rates reported in the *School Leaver Commencers* (DEET, 1990) study suggested that, even allowing for the transfer of nurse education into higher education, direct entry from school to higher education was one percentage point higher for females than males by the end of the 1980s and that higher

education entry rates for females may have equalled those for males as early as 1987. The results in Panel B of Table 6 show that the trend towards relatively higher rates of entry to higher education by female school leavers has continued into the mid 1990s.

Previous, more detailed analyses of these data, have shown that there were some further changes in the patterns of higher education entry of males and females during the 1980s (Williams *et al.*, 1993b). Throughout the decade there was a shift in the enrolments of females away from the then College of Advanced Education sector toward the University sector and away from sub-degree programs towards degree programs. The move towards the Unified National System, with the abolition of the distinction between universities and colleges probably served to cement these changes.

The adjusted rates in Panel B provide little help in interpreting these changes -- all values are within plus or minus one percent of the observed rates. This suggests that the selection process into higher education removes most of any effects that might be attributed to school achievement, post-school expectations and self-concept of ability.

Higher Education Participation

The results in Panel C show that after a period of reasonable stability during the early 1980s, the participation of both males and females increased towards the end of the 1980s and into the 1990s. The participation rates bring together the higher Year 12 completion rates of females across the 14 years spanned by the four cohorts and the trend towards relatively higher rates of entry to higher education from Year 12. These changes are jointly reflected in the shift from almost no difference between males and females in the early 1980s to a situation in the mid 1990s where females participated in higher education at a rate that is nearly a quarter higher than for males.

Although these results show the same trend for gender differences as the values that underlie Figures 3 and 11, they differ in terms of the absolute differences. The enrolment-based data show a clear difference in favour of females even in the late 1970s, while Table 6 shows little difference. This would follow if non-completion were higher for young males than young females (Long *et al.*, 1995) -- as many males as females might be *ever-in* higher education, but since females remain for more years their participation rates are higher.

As might be expected, there is relatively little effect of the first level of adjustment in Table 6. This follows from the fact that there should be little relationship between gender and other socio-demographic variables -- wealthy families should be as likely as poor families to have girls, rural families as likely to have girls as urban families, and so on. The lack of relationship, however, is not totally guaranteed -- poor families might, for instance, be more likely to encourage girls to enter higher education than boys, for instance. In any case, the results in Table 6 provide little indication of this.

There are, however, some effects evident at the second level of adjustment. If we remove the effects of early school achievement, self-concept of ability, perceived parental encouragement, and so on, the participation rates of males increase and those for females

decrease. This pattern is consistent across the four cohorts. It suggests that males are more likely to be disadvantaged for participation in higher education in terms of these characteristics than females. On the other hand, it means that in the early 1980s the likelihood of participation in higher education was *higher* for males, holding all other attributes constant in so far as we are able -- in 1980, for instance, the difference was four percentage points in favour of males (22% compared with 18%). By 1994, however, the likelihood of participation in higher education is *lower* for males (35% compared with 40%).

This is a very substantial change. In so far as we are able to determine, it has occurred despite a significant contraction of opportunities for males in apprenticeships -- a contraction that might have been expected to increase male demand for higher education. Either there is substantial market segmentation in choice of education -- that males who want to enter apprenticeships are either unwilling or unable to enter higher education (a strong possibility) -- or the shift in participation in higher education away from males would have been even stronger had not the supply of apprenticeships declined.

The major concern expressed in *A Fair Chance for All* (DEET, 1990) about the participation of women in higher education was their under-representation in particular fields and levels of study -- agriculture, architecture, engineering, business and economics, and science, and higher degrees by research and coursework. By 1997 women made up more than 40% of all these fields and levels of study except for architecture and engineering (DETYA, 1999: 10) -- an outcome which is hardly surprising given the increase in the relative higher education participation of women overall.

TAFE

Panel D in Table 6 shows that participation in TAFE courses other than apprenticeships and traineeships increased for both males and females for each cohort of the study. The rate of growth, however, has been greater for males than females. For males participation has nearly doubled during the 14 years covered by the study -- from 11% in 1980 to 19% in 1994 -- while participation rates for females have increased by a half -- from 14% in 1980 to 21% in 1994. The difference in the rate of increase, however, was not sufficient for the participation rate of males to overtake that of females -- in 1980 the participation rate for females was three percentage points higher than for males (14% compared with 11%) while in 1994 the participation rate was two percentage points higher (21% compared with 19%). Table A.1 shows, however, that while the gender differences were statistically significant in the early and mid 1980s, they were not statistically significant for the two most recent cohorts.

Although using a slightly different measure, Lamb *et al.*, (1998) present results which both suggest that the participation rate of young females in non-apprenticeship TAFE is higher than for males and that the participation rates of males and females converged between the mid 1980s and the mid 1990s (Lamb *et al.*,1998). The results presented in

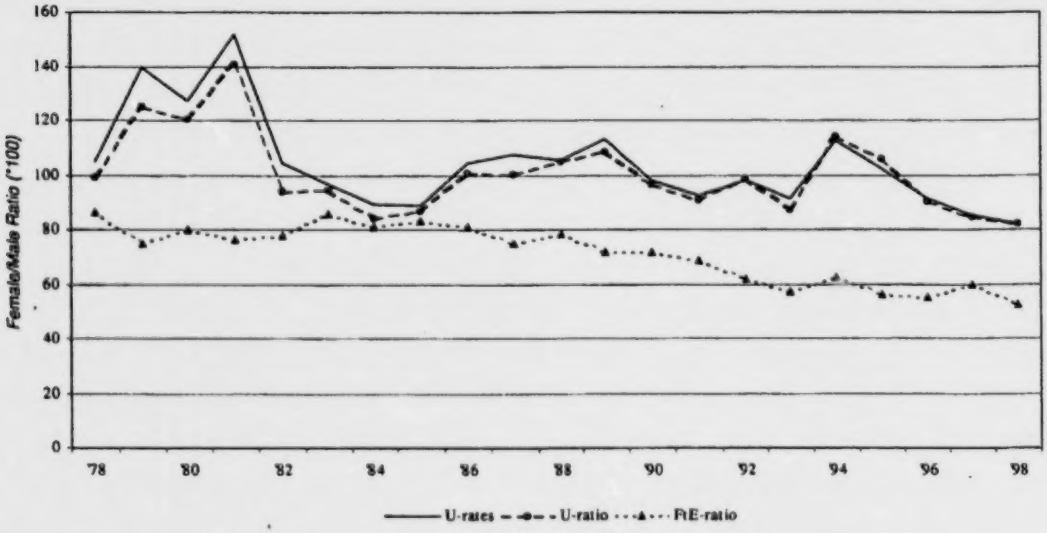

Figure 12 Ratio of Female to Male Unemployment Rates, Unemployment Ratios and Full-time Employment Ratios: Persons Aged 15 to 19 Years, Australia 1978-1998

Source: *Labour Force Survey* (ABS Cat. No. 6101.0)

Figure 5 and in Figure 11 show participation rates in TAFE based on administrative records of enrolments and do not separate apprenticeships from non-apprenticeship. The adjusted participation rates in Panel D are in most cases unchanged from the observed rates. This suggests that there are no strong differences between males and females who enter TAFE courses for any of the background characteristics examined in this study.

Apprenticeships

The results presented in Panel E of Table 6 reflect several tendencies. First, traditionally apprenticeships have been overwhelmingly male dominated. Second, the availability of apprenticeships declined markedly in the early 1990s, particularly those associated with the manufacturing industries which had been male-dominated. Third, the emergence of traineeships from the late 1980s is in industries and occupations that are less traditionally sources of male employment.

The results in Panel E of Table 6 show this very clearly. In the early and mid 1980s just over a third of males had participated in an apprenticeship by age 19 compared with only 4% of females. As the decline in apprenticeships (and the expansion of traineeships) began to be reflected in the values for participation in the late 1980s, the gap narrowed substantially. Male participation rates dipped slightly to 30% while participation for females increased to 9%. For the youngest cohort, participation rates of both males and

females declined, but males still participated at a rate more than three times higher than for females.

The first level of adjustment in Panel E makes little difference for any of the cohorts, but for the two earliest cohorts the second level of adjustment serves to reduce the gap between males and females quite substantially -- from 30 percentage points to 23 percentage points and from 31 percentage points to 21 percentage points respectively. This suggests that males were relatively advantaged in terms of parental and other expectations compared with females. Interestingly this difference seemed to disappear for the two most recent cohorts.

Post-School Education

The net result of the changes in participation in the various forms of post-school education by males and females is shown in Panel F. Throughout the period of the study, males have been more likely than females to participate in post-school education and training. This difference declined over time. In 1980, males were nearly two-thirds more likely to participate in post-school education than females, in 1984 males were a third more likely to participate than females, in 1989 males were a little over ten per cent more likely to participate than females, and by 1994 the difference in likelihood was a little under ten per cent.

The reason for the gender differences, and the change in those differences, are not hard to find. Males have dominated the apprenticeship system. The decline of that system, and to a lesser extent the increase in participation by females in the higher education system, have led to a reduction in the differences in participation in post-school education.

Discussion

We can advance a number of reasons for the increased relative participation in post-compulsory education by girls. As we suggested earlier, the returns to certain forms of education may be relatively higher for females than for males (Lamb *et al.*, 1998; OECD, 1998; Marks & Fleming, 1989a & 1998b). It may be that changes in the occupational structure are acting in such a way as to increase this relative advantage.

A further possibility is that changes in the youth labour market have made continued education a more attractive prospect for young females. Figure 12, which shows the ratio of female to male unemployment rates and unemployment ratios, suggests that this may not be the case. Gender differences in unemployment for young people seem to have declined over the last decade or so and it is difficult to claim that there is any consistent disadvantage for young women. Figure 12, however, also shows the ratio of female to male full-time employment ratios. The proportion of 15 to 19 year-old females in full-time employment has declined substantially compared to that of the corresponding group of males -- from over 80% of the male rate in the late 1970s to less than 60% of the male

rate by the mid 1990s. While this change may be as much a consequence as a cause of increasing relative female participation in post-compulsory education, if it is the case that young females, presumably without post-compulsory qualifications, are finding it increasing difficult to find full-time employment (not only absolutely, but especially relative to males), this would provide a strong incentive to continue in education. As discussed in Chapter 3, the increased relative availability of part-time work implied by the results presented in Figure 12 might provide a means of financing that continued educational participation.

The decline in the availability of apprenticeships in the early 1990s, together with the increasing tendency for entry by Year 12 graduates, raises a question about the role of apprenticeships in the lower levels of school retention observed for males. If apprenticeships are an alternative to school completion for males, then the decline of apprenticeships should have been associated with an increase in school retention -- but this does not seem to have been the case. Given the apparently higher levels of dissatisfaction with school reported by male school leavers, for many young males it may not be a choice between apprenticeship and school, but between apprenticeship and no further education.

Summary

This chapter has reviewed the changes in the differences in gender participation in post-compulsory education. It was found that:

- Girls are more likely than boys to complete Year 12. This gender difference was sustained throughout the period 1980 to 1994.
- The likelihood of female Year 12 graduates entering higher education has increased compared with that of males and by the mid 1990s was higher for females.
- Young women participate in higher education to a greater extent than young men do and the difference has increased during the period 1980 to 1994.
- Young women participate in vocational education and training at a lower rate than males, but this difference declined substantially over the last 14 years --in part because of the decline in the importance of apprenticeships (in which females are under-represented); in part because of the expansion of traineeships (in which females are better-represented); and in part because of the expansion of non-apprenticeship education and training (in which females are better represented).
- In 1994 young women were still less likely to participate in post-school education and training, but since some component of post-school education and training is an alternative to Year 12 completion, it is unclear whether females have lower initial levels of education and training than boys.

6. SOCIAL, EDUCATIONAL AND ECONOMIC ORIGINS

This chapter discusses the school completion and post-school educational participation rates associated with characteristics that fit under the general heading *family socio-economic status*. In their work on socio-economic status and higher education participation and attainment, Western *et al.* describe the concept succinctly:

> Socio-economic status is a broad concept that comprises three main dimensions: occupation, education and wealth. In the higher education context, the dimensions relating to parental occupation and education are most salient. These dimensions have been theoretically and empirically linked to educational attainments . . . (1998: xi).

The socio-economic status of young people cannot be measured by the occupation, education and wealth of the young people themselves. Instead, the interest is in any advantage or disadvantage that may be associated with their family of origin. In this chapter, we examine three measures -- parent's occupation, parent's education and family wealth. These measures tap, respectively, the social, educational and economic origins of the students.

Surveys of young people face limitations in the collection of information about their parents and families. The researcher is usually reliant on responses provided by the young person about their parents. Even by age 15 or 16 the respondent may not be able to provide a reliable description of their mother's and father's occupation (assuming that there is a mother and a father (or guardian) and that they have occupations). Information about parental education is possibly even more prone to problems of respondent ignorance. To ask about parental income is to face the possibilities of a very low response to the particular question, responses confounded by ignorance and a higher rate of complete refusal. Such difficulties have led to the (not altogether satisfactory) search for non-obtrusive area-based measures (see Ainley *et al.*, 1995; Western *et al.* 1998; DETYA, 1999).

The difficulties in obtaining accurate information from students would, if anything, tend to artificially lower the observed relationship of each of our three measures with Year 12 completion and the various forms of educational participation. Even so, our results show quite strong relationships between the components of socio-economic status and the various forms of educational participation.

It is common in the literature to combine measures of the characteristics of occupation, education and wealth into a single measure of socio-economic status. Such a measure has the advantage of parsimony and greater reliability. A summary measure of socio-economic status, however, requires that the detail provided by the three separate measures be sacrificed. Several studies have suggested that a single dimension cannot adequately represent socio-economic status (Power & Robertson, 1987; Williams, 1987; Hauser & Warren, 1997). It seemed prudent, then, to examine the three measures separately, especially if their various relationships with educational participation have different implications for policy responses.

Background

There is substantial evidence that the components of socio-economic status are important influences on the schooling of young people. Students from lower socio-economic backgrounds have lower levels of retention and achievement, study different subjects and have different post-school aspirations. (Rumberger, 1987; Miller & Volker, 1989; DEET, 1987; Williams & Carpenter, 1990; Connell *et al.*, 1991; Lamb *et al.*, 1998).

Researchers have advanced a number of theories to explain observed social inequalities in educational participation in capitalist societies. Some suggest that secondary schools actually select and allocate students according to their social origins into a social class structure, thereby ensuring the continuity of elite groups from one generation to the next (Bowles & Gintis, 1976; Lindsay, 1981; Connell *et al.* 1982), a view strongly disputed by researchers such as Featherman (1980), Olneck & Bills (1980) and Bills (1983). Other researchers argue that schools and universities certify the cultural advantages of children from better-educated families by adopting teaching methods, styles, curricula and language appreciated only by such students (Bernstein 1977; Bourdieu & Boltanski 1978). Another group claim that individuals' educational attainments are affected by their ability to employ particular enabling conditions within their social environments (Cuttance 1980; Marjoribanks 1980). Families from dominant social class groups can, for example, decide what is valued in the educational system and take whatever means are necessary to pass on to their children the skills and attitudes related to the achievement of the valued goals of schooling.

What seems to occur is that the social class milieu in which an individual is reared influences their educational aspirations and achievements. Studies in the United States, England, and Australia have shown that social class funnels young people towards particular types of school, as well as amounts and types of education (Warren & Hauser, 1997; Goldthorpe 1996). One cogent explanation of this is that the plans or expectations of young people for the years after the completion of school may actually reflect the kinds of educational and employment experiences they have been exposed to in their homes. Parents may be able to pass on to children knowledge of the educational system using job or educational contacts (Roberts, 1984), and may directly assist them to cope with its demands (Halsey *et al.* 1980). In times when the market for higher education graduates tightens, upper middle class families in particular have been found to allocate sufficient resources to ensure that their children gain access to higher education and are sponsored into economically rewarding careers (Gross & Western 1981).

In the context of the substantial increase in educational participation in many developed countries, differences in access associated with aspects of the socio-economic background of the family might be expected to have declined. Goldthorpe (1996), however, drawing upon a range of research studies including those collected by Shavit and Blossfield (1993), contends that there seems to be no strong evidence of any 'generalized and sustained reduction in class differentials in educational attainment . . .' (1996: 488).

The Commonwealth Government has introduced a number of schemes designed to encourage students from disadvantaged backgrounds to stay at school. In the 1960s Commonwealth Scholarships became available to some students in upper secondary school. The scholarships were awarded on the basis of open examination and, while not explicitly targeted towards persons from socio-economically deprived backgrounds, assisted some students who would not otherwise have been able to stay at school. The means-tested Student Allowance Scheme (SAS), which replaced Commonwealth Scholarships in 1973, was explicitly designed to help school students from lower socio-economic backgrounds. In 1987 SAS was incorporated within AUSTUDY. The changes in eligibility rules of the various schemes, and in the level of support provided, make it difficult to give any sense of the importance of the schemes over the period covered by this study. As an indication, however, in 1989, about 180,000 secondary school students (about 47% of school students aged 16 or more) received some assistance through AUSTUDY, compared with 52,700 (about 14% of school students aged 16 or more) in 1983 from SAS. In 1989 the maximum payment for the most needy students living with their parents was about $1400 per annum (Brumby, 1989: 22, 160). The introduction of AUSTUDY appeared to have the potential to make a significant impact on school retention.

State Governments also provide schemes of financial support designed to help meet the educational costs of lower socio-economic families -- although these vary across States in terms of eligibility and the level of support. In 1989 support rarely exceeded $500 per annum and was often much less. The only instance in which State support exceeded $500 was Tasmania, which had a living-away-from home allowance (Brumby, 1989: 161-163). Eligibility was set at fairly low levels of income, consistent with receipt of unemployment or social security benefits and in the case of Victoria and Western Australia was linked to eligibility for a Health Care Card. For most States financial support focused on primary and junior secondary schooling and hence overlapped only partially with eligibility for AUSTUDY (if at all). In those States that provided support for senior secondary students, the amounts involved at least partially offset the costs of school education and reduced any real short-term difference between income from unemployment benefits and educational assistance.

Apart from income support schemes, Commonwealth and State Governments have introduced other programs designed to assist the school participation of young Australians from lower socio-economic backgrounds. An alternative to providing support to students in need is to provide support to the schools in which they learn. The Commonwealth Government's Disadvantaged Schools Program (DSP) took this approach. The DSP, originally conceived as a poverty program, began in 1974 and continues to the present as an element of the *National Equity Plan for Schools* (NEPS). The DSP provides grants to 'schools serving economically depressed areas with high unemployment levels' (CSC, 1983: 19). It can be viewed as providing funding to replace resources that wealthier parents would be able to provide for a school, or as providing additional resources to create a better learning environment to compensate for a disadvantaged family background. The program provides supplementary funding to schools that teach about 15% of students (Sturman, 1997: 36).

Batten (1995) reported on a survey of school programs designed to assist students from lower socio-economic background. The projects supported under DSP funding (which differed among the States) included projects designed to enhance literacy and numeracy (which often consumed substantial portions of the overall funding) and to assist the transition of students between kindergarten and primary school and between primary and secondary school. Both as part of transition programs, and independently of them, there was a focus on the creation of an integrated and broadbanded curriculum to better engage students' interests. Curriculum enhancements were also funded -- after-school activities, alternative curriculum or sporting activities -- often with parental involvement.

Batten quotes from the 1993 projects register in Western Australia (which then had a stronger emphasis on life-skills than some States) from which the following examples are taken: after school coaching and activity clubs, directed homework help, hiking camps, life skills seminar, job application and resume writing, presentation graphics, motivation breakfasts, robotics control box, student council camp, school chaplain, Sea Trek 1993, teenage fashion awards, and Year 12 towards transition seminar -- all from the one senior high school.

State initiatives designed to redress educational disadvantage associated with socio-economic background are also numerous and we can only provide an indicative list from Batten's 1994 survey. New South Wales had the *Staying on Program* (which included the development of a more diversified curriculum, more courses with a vocational orientation, cross-credentialing with TAFE, and structural changes in course delivery to make students more comfortable in a school environment), early literacy programs, and homework centres; Victoria had a supplementary teacher aides program, in Queensland there was the *School Enhancement Project,* the *Youth and Community Combined Action* program, and the *Helping P&C's with the Basics* program; South Australia had the *Focus School Program* and primary school counsellors and Tasmania cited the availability of school social workers.

During the 1980s two further Commonwealth initiatives were introduced. Both were also programs that sought to improve educational outcomes for economically disadvantaged students by improving their school environment. The *School to Work Transition Program* (1980-83) funded school-level curriculum innovations designed to assist the transition from school to work. It was superseded by the *Participation and Equity Program* (1983-87) which funded more mainstream curriculum and learning projects that might encourage young people to remain at school.

Concern about socio-economic disadvantage in school education persists in the 1990s. The *National Equity Program for Schools* (NEPS) was formed in the context of a newly stated common understanding among Commonwealth and State Governments of the purpose and goals of school education (Brumby, 1989). Within this context the Ministerial Council for Employment, Education, Training and Youth Affairs (MCEETYA) endorsed the *National Strategy for Equity in Schooling* (MCEETYA, 1994). NEPS, working to that strategy, brought several Commonwealth targeted school

equity programs, including the DSP, within a single agreed structure of purpose and accountability.

Apart from administrative simplicity, NEPS brought with it a desire to broadband equity, to allow sources of educational disadvantage to be treated as an integrated whole. Nevertheless, NEPS still identified seven target categories of students. One of those categories is *students from a low socio-economic background or living in poverty.*

With respect to higher education, Western *et al.* (1998) referring to the work of Skuja (1995) and Martin (1994) conclude that:

> The results of studies assessing the socio-economic status of students in Australian higher education have provided indisputable evidence of a socio-economic imbalance. Students from low socio-economic backgrounds display the lowest access and participation rates, remaining under-represented in virtually all fields and levels of study. (p. 11).

Government policies have at various times recognised the unequal entry to higher education of people from different socio-economic backgrounds as a problem -- both in terms of social justice and in terms of economic efficiency. In 1972, partly motivated by considerations of equity, the Federal government abolished tuition fees at universities and took over financial responsibility for universities from the State governments. In 1984 the Commonwealth Tertiary Education Commission (CTEC) allocated most of the additional places in the 1985-87 triennium to higher education institutions in outer metropolitan (and lower socio-economic) areas, particularly in Sydney and Melbourne in response to government concerns about a range of equity groups, including students from low-income families (CTEC, 1987: 97).

The hesitant moves towards the reintroduction of fees in 1987 and 1988 (the Higher Education Administration Charge) contained various categories of exemption for financially disadvantaged students. The Higher Education Contribution Scheme (HECS), the reintroduction of tuition fees, was designed around principles of financial equity. The major innovative element of the scheme was the provision for what were essentially loans with income-contingent repayment schedules. Later extensions of the scheme provided for additional payments to needy students on similar terms. Hence students from financially disadvantaged backgrounds would not have access to higher education denied because of being unable to pay for fees. The scheme itself was set in the context of the expansion of higher education participation (and hoped for greater equity) and a recognition that the abolition of fees had produced an income transfer from middle to low income earners (whose children were less likely to go to university) to high income earners (whose children were more likely to go to university).

Programs of direct financial assistance to students were introduced to improve the access to higher education of persons from financially disadvantaged backgrounds. The Tertiary Education Assistance Scheme (TEAS) was introduced in 1973 and consisted of means-tested grants and living allowances. It replaced the system of government scholarships

that were distributed on the basis of academic performance. Teacher scholarships or stipends (which obliged students to work for State government departments of education for a period after graduation) also rapidly became less important with the introduction of TEAS. AUSTUDY was introduced in 1987 to assist students whose individual and family circumstances were such that, without financial help, full time study would not be possible. It brought together the Secondary Allowance Scheme, the Adult Secondary Education Assistance Scheme and TEAS. For young people, eligibility criteria included parental income and assets. Much of AUSTUDY was incorporated into the Youth Allowance from July 1998.

The vocational education and training sector was often responsible for the delivery of labour market programs during the 1980s and early 1990s -- programs that would have engaged many teenagers from lower socio-economic backgrounds. There was, however, no direct mention of socio-economic disadvantage in the Australian National Training Authority's (ANTA's) 1994 national strategy plan for vocational education and training (VET). Following the *Common and Agreed National Goals for Vocational Education and Training in Australia* (DEET, 1991), the plan identified six categories of people whose needs have not always been identified or incorporated into vocational education and training programs and delivery. The categories were: women, Aboriginal and Torres Strait Islander people, people without adequate social, literacy and numeracy skills, people with disabilities, rural and isolated people, and unemployed people. While these categories overlap with socio-economic disadvantage in some instances, socio-economic disadvantage itself was not seen by the ANTA Ministerial Council as a source of disadvantage that warranted separate treatment -- and possibly for good reason. In their report, *Participation in TAFE,* Sturman and Long conclude that 'TAFE provides a very accessible entry to post-secondary education' (1990: 90). More recently, Lamb *et al.* found that 'Post-school VET plays a very important role for young people from lower status origins in their transition from school to work.' (1998: 26). They do point out, however, an under-representation of young people from the lowest socio-economic backgrounds in participation in apprenticeships, particularly for males (p. 42).

Parent's Occupation

Parental occupation is one of the three components of socio-economic status. In this section we principally use the father's occupational status because there is a substantial proportion of mothers who are not in paid employment. Where father's occupation was not available, however, we have used the mother's occupation. Collectively we refer to these as parent's occupation.

Table 7 shows Year 12 completion and educational participation rates for six occupational categories ranked in terms of their occupational prestige (see Broom *et al.*, 1977) from highest to lowest -- professional, managerial, clerical, skilled, semi-skilled and unskilled. We sometimes refer to a broader distinction between white-collar occupations (the first three categories) and blue-collar occupations (the other three categories).

Table 7 Year 12 Completion and Selected Forms of Educational Participation by Age 19, by Parental Occupation: 1980, 1984, 1989 and 1994

Cohort born in . . .	1961			1965			1970			1975		
At age 19 in . . .	1980			1984			1989			1994		
Level of adjustment . . .	0	1	2	0	1	2	0	1	2	0	1	2
	%	%	%	%	%	%	%	%	%	%	%	%
Panel A: *Year 12 Completion*												
Professional	**61**	58	46	**65**	59	47	**76**	72	60	**90**	86	82
Managerial	**45**	45	40	**49**	48	43	**61**	61	56	**79**	79	79
Clerical	**36**	35	33	**42**	43	43	**61**	60	57	**83**	83	83
Skilled	**30**	30	35	**29**	29	34	**48**	48	55	**76**	77	78
Semiskilled	**21**	23	30	**24**	26	32	**50**	52	54	**71**	73	76
Unskilled	**28**	30	35	**24**	27	33	**44**	47	54	**73**	75	78
Panel B: *Entry to Higher Education from Year 12*												
Professional	**59**	57	54	**64**	58	52	**69**	65	54	**68**	64	56
Managerial	**49**	50	48	**49**	48	48	**50**	50	50	**56**	55	54
Clerical	**54**	55	52	**46**	45	46	**57**	57	53	**53**	55	54
Skilled	**48**	48	50	**44**	44	47	**41**	42	51	**39**	42	44
Semiskilled	**47**	49	55	**36**	45	49	**40**	43	47	**26**	29	38
Unskilled	**40**	41	44	**40**	47	50	**45**	47	51	**33**	36	44
Panel C: *Higher Education Participation*												
Professional	**38**	35	27	**42**	36	25	**52**	48	34	**62**	56	46
Managerial	**23**	24	20	**24**	24	20	**31**	31	27	**44**	43	43
Clerical	**24**	25	24	**20**	20	20	**35**	35	31	**44**	45	43
Skilled	**18**	16	20	**13**	13	18	**20**	19	28	**30**	32	33
Semiskilled	**11**	13	19	**11**	14	18	**20**	23	26	**18**	23	31
Unskilled	**13**	15	18	**10**	13	17	**20**	22	28	**24**	28	35
Panel D: *TAFE (Non-Apprenticeship) Participation*												
Professional	**14**	14	14	**18**	17	17	**15**	15	18	**17**	20	21
Managerial	**17**	16	16	**17**	16	16	**15**	15	16	**17**	17	17
Clerical	**13**	13	12	**17**	17	18	**22**	23	24	**18**	19	19
Skilled	**10**	11	11	**14**	14	14	**23**	22	20	**23**	22	23
Semiskilled	**10**	10	10	**16**	17	17	**22**	22	21	**25**	24	22
Unskilled	**10**	10	10	**18**	19	18	**14**	14	13	**21**	20	17

Table 7 Year 12 Completion and Selected Forms of Educational Participation by Age 19, by Parental Occupation: 1980, 1984, 1989 and 1994 (Continued)

Cohort born in . . .	1961			1965			1970			1975		
At age 19 in . . .	1980			1984			1989			1994		
Level of adjustment . . .	0	1	2	0	1	2	0	1	2	0	1	2
	%	%	%	%	%	%	%	%	%	%	%	%
Panel E: ***Participation in Apprenticeships (inc. Traineeships)***												
Professional	**14**	13	16	**14**	14	18	**8**	9	13	**8**	8	10
Managerial	**18**	16	16	**13**	13	15	**18**	19	20	**14**	14	14
Clerical	**20**	19	19	**18**	16	15	**22**	21	21	**11**	11	11
Skilled	**23**	24	23	**22**	22	22	**28**	27	24	**19**	19	17
Semiskilled	**18**	20	19	**22**	22	19	**23**	23	23	**16**	16	14
Unskilled	**17**	19	19	**20**	20	19	**13**	13	11	**17**	17	15
Panel F: ***Post-school Educational Participation***												
Professional	**64**	61	56	**74**	69	62	**75**	72	65	**81**	77	72
Managerial	**55**	54	50	**60**	60	58	**63**	64	62	**71**	70	70
Clerical	**54**	53	52	**58**	57	56	**79**	79	76	**68**	69	68
Skilled	**49**	49	51	**55**	55	59	**66**	64	69	**66**	67	67
Semiskilled	**40**	44	47	**51**	54	56	**66**	69	71	**55**	57	62
Unskilled	**39**	42	45	**47**	50	52	**47**	49	52	**57**	58	63
Panel G: ***Sample Sizes***												
Professional		484			378			263			643	
Managerial		601			537			311			734	
Clerical		404			276			139			312	
Skilled		685			557			345			520	
Semiskilled		520			451			259			448	
Unskilled		444			403			268			395	

See *Notes to Tables*

Year 12

Panel A in Table 7 shows that there is a clear tendency in each of the cohorts for students from a higher occupational status background to have higher rates of Year 12 completion for each of the four cohorts in this study. The differences between highest and lowest categories are quite large. Within the cohorts, however, there is some variation in the ordering of the categories. Students with parents whose occupation was classified as *Professional* had consistently and markedly higher completion rates than other students. The completion rates for the other two white-collar categories -- *Managerial* and *Clerical* -- are next highest and for some cohorts at least the completion rates are not too

dissimilar. There is a tendency across the cohorts for the rates for the clerical category to have overtaken those for the managerial category. Within the three categories that could be labelled 'blue-collar' there is no strict ordering. Year 12 completion rates for students with parents in *Skilled* occupations appear to be marginally higher than for the other two categories for most years, but there was often little difference among these categories.

The major trend across the 14 years from 1980 to 1994 was the greater increase, both relatively and absolutely, of the Year 12 completion rates of students from blue-collar backgrounds. School completion rates of students with parents in blue-collar occupations nearly tripled during the 1980s to the mid 1990s. Just over one in four students from a blue-collar background completed school in the early 1980s compared with just under three in four in the 1990s -- an increase of nearly 50 percentage points. By comparison, the completion rates for the *Professional* category increased by only a half, from 61 per cent in 1980 to 90 per cent in 1994.

There has also been substantial convergence of the Year 12 completion rates of the *Managerial* and *Clerical* categories with both those of the blue-collar and *Professional* categories, although, as already noted, the completion rates of students with parents in *Clerical* occupations appear to have improved compared with students whose parents were in *Managerial* occupations.

The net result of these changes is that the differences in the completion rates between the highest and lowest occupational status groups have been substantially reduced. In the early 1980s the completion rates of the professional category were more than twice those of the blue-collar categories. By the mid 1990s the difference had fallen to less than a third.

The observed relationship between students' parental occupation and the likelihood of completing Year 12 could be due to other factors that are related to both parental occupation and school completion. Parental education and family wealth are likely candidates. The changes in graduation rates after the first level of adjustment suggest that some of the relationship between parental occupation and graduation rates can be attributed to other factors. For all four cohorts, the after-adjustment graduation rate for the professional category declines by between three and six percentage points while the corresponding rates for the blue-collar categories -- especially *Semi-skilled* and *Unskilled* -- increase by two or three percentage points. There is, however, still a relationship between parental occupation and Year 12 completion even after removing the effects of other family and personal background factors.

The differences in school completion rates among the categories of parental occupation are further reduced after controlling for differences in school experiences and post-school expectations. This result suggests that some of the effects of parental occupation on school completion are transmitted through characteristics such as early school achievement, school system and the perceived post-school expectations of parents, teachers and friends. For the 1961 and 1965 cohorts, some direct effect of parental

occupation on school completion remained after adjustment. For the more recent cohorts, however, there are only relatively small residual differences. This indicates that the majority of the effect of parental occupation on school completion is the result of different school experiences (achievement scores, type of school attended, and self-concept of ability) and post-school expectations (the expectations of parents, teachers and friends about further study and work).

Entry to Higher Education from Year 12

Year 12 graduates from homes in which the parent's occupation has a higher prestige rating have a higher probability of entering higher education. This relationship has not been consistent in all the results in Panel B. There are instances where, for a given cohort, the entry rates from Year 12 are higher for say the *Unskilled* category than for the *Semi-skilled* category and where entry rates are higher for the *Clerical* category than for the *Managerial* category. If, however, the parental occupation categories are 'broad-banded' into three categories of *Professional, White-collar* (managerial and clerical) and *Blue-collar* (Skilled, Semi-skilled and Unskilled), then the relationship becomes clearer.

The tendency for Year 12 graduates from categories of higher parental occupational prestige to have a greater likelihood of entering higher education has increased during the 14 years covered by this study. In the early 1980s, the entry rates for the *Professional* category were a little less than a third higher than the entry rates for the blue-collar categories. By the mid 1990s, however, entry rates for the *Professional* category were twice those of the blue-collar categories. There was a similar trend for the relative gap between the white-collar and blue-collar categories to increase across the four cohorts. In the early 1980s entry rates for the white-collar categories were about a fifth higher than for the blue-collar categories. By the mid 1990s they were nearly two-thirds higher. Entry rates for the white-collar categories more or less maintained their parity with those of the *Professional* category.

The relative changes in entry rates across the three broad categories of parental occupational prestige are the result of divergent trends in the absolute rates. For the *Professional* category entry rates increased across the four cohorts, for the white-collar category entry rates were fairly steady, and entry rates for the blue-collar categories declined absolutely from the early 1980s to the mid 1990s.

For the most recent cohort, there is a 42 percentage points difference between the category with the highest entry rates and the category with the lowest entry rates. Some component of this difference is clearly attributable to correlates of parental occupation such as parental education and family wealth. The first set of adjusted rates for this cohort show the expected pattern -- entry rates that are relatively high decline and entry rates that are relatively low increase. Even so, after the effects of family and personal background characteristics have been removed there is still a 35 percentage point difference between the categories with the highest and lowest entry rates. There are clear differences between the three broad-banded groupings.

A further component of this difference is attributable to factors such as school achievement, type of school attended and the perceived expectations for post-school activities of parents, teachers and friends. When the entry rates of the most recent cohort are statistically adjusted for these effects, statistically significant differences remain. The differences between the professional and white-collar categories have all but disappeared, but a gap of some 12 percentage points between these categories and the blue-collar categories persists. Regardless of differences in school achievement or any other characteristic that we have been able to measure, Year 12 graduates from blue-collar homes had a lower likelihood of entry to higher education by age 19 than Year 12 graduates from professional or white-collar homes in the mid 1990s -- and this difference was greater and more systematic than in previous cohorts.

Higher Education Participation

Parental occupation has a strong influence on the participation of young people in higher education. The results in Panel C show that participation in higher education increased for all categories of parental occupation between the early 1980s and the mid 1990s. The relative size of the influence of parental occupation was similar in the early and late 1980s and the mid 1990s, although it was substantially greater in the mid 1980s. Young people from the professional category were 2.7 times as likely as young people from the blue-collar categories to participate in higher education in the early 1980s, 3.6 times in the mid 1980s, and 2.6 times in the late 1980s and mid 1990s.

The selection processes which underlie these differences have changed substantially across that period -- a decline in the effect of parental occupation on Year 12 completion coupled with an increase in the effect of parental occupation on entry to higher education from Year 12. The net result, though, has been almost no change in the relative rates of participation in higher education participation of young people with parents in blue-collar occupations.

The adjusted values in Panel C show the expected effects -- once we remove the influence of other family and personal background characteristics, the differences are reduced but not removed. Importantly, if we further control for factors such as differences in school achievement and the expectations of significant others, a direct effect of parental occupation on participation in higher education remains for the most recent cohort. There is still a 10 percentage point gap between the higher education participation rates of young people from professional and white-collar homes and young people from blue-collar homes. Young people with parents in professional and white-collar occupations are about a third more likely than otherwise similar young people with parents in blue-collar occupations to attend university -- a difference in participation attributable solely to differences in parental occupation.

TAFE

The relationship between parental occupation and participation in non-apprenticeship TAFE courses has changed during the 14 years spanned by the four cohorts in this study. In the early 1980s young people from professional and white-collar families were more

likely to participate in TAFE than young people from blue-collar families. By the mid 1990s this situation had reversed. Growth in participation in TAFE was strongest among young people from blue-collar families. In the most recent cohort, young people from blue-collar families were about one and half times more likely to participate in TAFE than young people from other families.

The first level of statistically adjusted values in Panel D show that for the most recent cohort much of the difference in TAFE participation among categories of parental occupation is due to correlates of parental occupation. When the effect of these correlates is removed, the differences among the categories are reduced by two or three percentage points. The remaining differences are not statistically significant. Further adjustment for the vector of school experiences and post-school expectations produces only slight changes. Again the differences are not statistically significant.

Apprenticeship

Young people from homes in which the parent's occupation is classified as *Skilled* are more likely to participate in apprenticeships than other young people. This is a consistent result across all four cohorts. Given that *Skilled* occupations are often those that require an apprenticeship for entrance, and that apprenticeships are a predominantly male activity, these results suggest that sons may be following in their father's footsteps. Whether it is the effect of fathers as role models, or that having a father working in apprenticeship-related occupation increases the opportunities of finding an apprenticeship, is unclear. Regardless, there appears to be an effect.

Among the other categories it is difficult to distinguish any clear or consistent relationships within the cohorts -- though the differences for any given cohort are statistically significant. Young people from semi-skilled and, to a lesser extent, clerical families have participation rates towards the upper end of the range. Apprenticeship participation rates for the *Professional* category are relatively low in each cohort.

In the absence of any consistent pattern among the categories, it is difficult to find trends across years. It is possible to note, though, that the shortage of apprenticeship places in the early 1990s appeared to be associated with a movement towards smaller differences among categories of parental occupation than had existed previously.

Statistical adjustment to try to isolate the relative contributions of other factors to the observed differences often had little effect. This indicates that such differences as are observed among categories of parental occupation can be attributed principally to parental occupation. For the 1975 cohort, however, the modest changes that result from statistical adjustment are sufficient to make the differences in apprenticeship participation among categories no longer statistically significant.

Post-School Education

Participation in post-school education and training is associated with parental occupation -- the higher the prestige of the parental occupational category, the greater the likelihood of participation in post-school education and training. This is true for all the cohorts with

only one exception that lies outside the bounds of sampling variability -- the anomolously high participation rate of 79% for the clerical category in the 1970 cohort. This particular result is a confluence of relatively minor advantages across each of the forms of post-school education.

The size of the association between parental occupation and participation in post-school education is large -- it is around 25 percentage points difference between the highest and lowest categories for each of the cohorts. Although the absolute differences have been similar for each of the cohorts, the overall increase in post-school education implies that relative differences have declined -- and they have, but not greatly. Young people from the professional families were about 1.5 times more likely to participate in post-school education than young people from blue-collar families in the early and mid 1980s and 1.4 times more likely in the mid 1990s. The results for the most recent category, however, represent an increase from the late 1980s when the difference had fallen to only 1.2 times.

Other factors associated with parental occupation such as family wealth and parental education are clearly responsible for some of these differences. The adjusted values in Panel F show that this is the case, but perhaps not to the extent that some might expect. Most adjustments are only of the order of two or three percentage points, which is not substantial in the context of the large initial differences. For the 1970 cohort, however, the first level of adjustment is sufficient to remove any consistent ordering of categories of parental occupation by rates of participation in post-school education. For the other cohorts the categories preserve their ordering from high to low rates of participation.

The second level of adjustment reduces the effect of parental occupation substantially and there is no statistically significant effect of parental occupation on participation in post-school education for the 1961 and 1965 cohorts. Although the results for the 1970 cohort are statistically significant, the pattern of results does not suggest relationship that the likelihood of participation in post-school education consistently increases with the prestige ranking of parental occupation. It is only for the most recent cohort that a significant and consistent set of differences remains. In the mid 1990s, for the first time in this study, parental occupation has a direct effect on participation in post-school education after the effects of all other measured variables have been removed. This suggests that in the most recent cohort parental occupation had a direct effect on participation in post-school education independently of other social and personal background factors and school experiences and post-school expectations.

Parent's Education

The effect of a parent's educational attainment on their children's education outcomes may be transmitted through a number of mechanisms. At the most basic level, it is likely that some of the parent's knowledge and skills will be available for the child to learn at home. The parent becomes an educational resource for the child. Children can also identify with their parents and educational attainment may form part of this identification. Parents can also act directly to foster a positive or negative attitude to school in their child and this, presumably, may reflect their own experiences and attainments. Such influences are, to some extent, independent of parental occupation and family resources.

Table 8 Year 12 Completion and Selected Forms of Educational Participation by Age 19, by Parent's Education: 1980, 1984, 1989 and 1994

Cohort born in . . .	1961			1965			1970			1975		
At age 19 in . . .	1980			1984			1989			1994		
Level of adjustment . . .	0	1	2	0	1	2	0	1	2	0	1	2
	%	%	%	%	%	%	%	%	%	%	%	%
Panel A: *Year 12 Completion*												
Post-secondary	**54**	43	34	**68**	54	44	**75**	65	56	**94**	90	85
Completed secondary	**34**	33	35	**39**	39	39	**53**	53	52	**72**	74	75
Some secondary	**37**	39	38	**33**	35	36	**56**	56	58	**77**	77	78
Primary	**29**	32	35	**32**	33	38	**52**	54	57	**84**	81	84
Panel B: *Entry to Higher Education from Year 12*												
Post-secondary	**61**	58	50	**70**	63	53	**78**	73	60	**65**	56	48
Completed secondary	**48**	47	50	**49**	49	49	**52**	51	51	**51**	52	53
Some secondary	**49**	50	51	**44**	46	48	**45**	46	49	**43**	46	47
Primary	**47**	48	47	**38**	42	45	**45**	48	50	**37**	39	45
Panel C: *Higher Education Participation*												
Post-secondary	**37**	30	23	**50**	39	29	**58**	49	41	**62**	51	41
Completed secondary	**18**	21	19	**20**	19	20	**28**	28	26	**37**	38	40
Some secondary	**20**	17	21	**15**	17	17	**25**	26	27	**33**	36	37
Primary	**16**	18	20	**13**	15	19	**23**	26	30	**31**	30	35
Panel D: *TAFE (Non-Apprenticeship) Participation*												
Post-secondary	**10**	9	9	**16**	16	17	**24**	24	27	**12**	13	14
Completed secondary	**15**	15	15	**17**	17	16	**18**	18	18	**22**	22	22
Some secondary	**13**	13	13	**16**	16	16	**17**	17	16	**20**	20	20
Primary	**10**	11	11	**17**	18	18	**20**	21	20	**27**	27	27
Panel E: *Participation in Apprenticeships (inc. Traineeships)*												
Post-secondary	**10**	12	14	**9**	12	15	**7**	12	17	**9**	11	14
Completed secondary	**22**	20	19	**24**	22	21	**20**	20	21	**20**	20	20
Some secondary	**18**	18	19	**17**	17	18	**17**	17	17	**16**	15	15
Primary	**19**	22	21	**14**	14	13	**23**	20	18	**13**	16	15
Panel F: *Post-School Educational Participation*												
Post-secondary	**56**	50	45	**74**	66	60	**86**	82	79	**79**	72	67
Completed secondary	**52**	49	50	**63**	61	60	**66**	66	65	**67**	67	68
Some secondary	**49**	50	49	**51**	53	54	**59**	60	60	**64**	66	67
Primary	**44**	49	50	**46**	50	52	**66**	66	68	**68**	69	72
Panel G: *Sample Sizes*												
Post-secondary		257			227			123			481	
Completed secondary		890			970			607			1000	
Some secondary		1364			1091			724			1474	
Primary		523			454			203			210	

See *Notes to Tables*

Our measurement of parental education is based on the educational attainments of the mother. For respondents for whom information was not available on their mother's education, their father's education was used. The focus on mother's education recognises the primary role mothers still have in the caring and raising of children.

The influence of the increases in educational participation (both among the young and adult population) are evident in the increased levels in parental education shown in Panel G in Table 8. For the first three cohorts, 7 or 8% of respondents had parents with post-secondary qualifications. For the most recent cohort, however, this had doubled to 15%. Similarly, at the other end of the scale, the percentage of respondents reporting parents with no secondary schooling declined markedly from 17 to 7%. If the educational background of parents contributes to the educational outcomes of their children, then recent increases in educational participation may become self-perpetuating.

Year 12

The major feature of the relationship between parent's education and school completion is the markedly higher rates for students whose parents had completed a post-secondary educational qualification. The differences among the other categories in Panel A of Table 8 are not always consistent across the four cohorts -- the values for the *Completed secondary* category are not always higher than those for the *Some secondary* or *Primary* category.

During the period 1980 to 1994 the Year 12 completion rates increased absolutely for all categories. Over time the relative difference between the school completion rates of students whose parents had some post-secondary education and other students has declined. For the 1961 and 1965 cohorts the rates for the post-secondary category are about 70 per cent or twice as high as the rates for the others respectively, while for the 1970 and 1975 cohorts the difference is reduced to about 40 per cent and 30 per cent respectively.

As might be expected, some of the observed relationship between parental education and Year 12 completion is associated with other personal and family background factors. After adjustment for these factors, the completion rate for the post-secondary category declines in each of the four cohorts. The size of this change, however, is substantially less for the 1975 cohort. For the other three categories the change is at least 10 percentage points, but for the 1975 cohort the change is only four percentage points. This is symptomatic of an overall decline in the effect of many family, especially socio-economic, characteristics on Year 12 completion rates. Even after adjustment for correlates of parental education, there are still differences in completion rates among the categories of parental education.

The values for the second level of adjustment show a further reduction in differences among the categories and for the 1961 and 1970 cohorts the differences are all but removed entirely. This indicates that much of the difference in Year 12 completion attributable to parental education is associated with difference in school experiences and post-school expectations.

Entry to Higher Education from Year 12

The higher the level of parental education, the greater the likelihood of transition to higher education. For the most recent cohort, the difference between the entry rates for the *Post-secondary* and the *Primary* categories is 28 percentage points -- a very large difference. In the mid 1990s Year 12 graduates whose parents have post-secondary education were 1.8 times as likely to enter higher education as Year 12 graduates whose parents had no secondary education.

This relationship has varied over time. The absolute and relative differences among the four cohorts were comparatively small in the early 1980s, but have been much larger in subsequent cohorts. From the mid 1980s the relative difference between the *Post-secondary* and *Primary* categories has been similar. If, however, the focus is shifted from the entry rates of the extreme categories (which contain relatively smaller percentages of the sample) to the entry rates of the two middle categories (which contain the majority of the sample), then there is a consistent pattern across the four cohorts -- the relative differences have increased marginally with each cohort from the early 1980s to mid 1990s.

The first level of adjustment tends to reduce the differences in entry rates among the categories of parental education. The largest effect is usually to adjust the entry rate for the *Post-secondary* category downwards, while the entry rates for the *Some secondary* and *primary* categories are usually adjusted upwards by two or three percentage points. For the most recent cohort, the differences among categories are reduced substantially, although the entry rates for the primary category are still markedly lower than for any other category. This was not a feature of the adjusted rates in previous cohorts and may reflect the fact that the proportion of parents without any secondary education has declined. Coming from the lowest parental education category may be more of a disadvantage in the 1990s than previously.

The second level of adjustment has quite substantial effects on differences in entry rates among the categories. For the 1961 and 1965 cohorts the differences are not statistically significant; for the 1970 cohort all categories except *Post-secondary* have similar entry rates; and for the 1975 cohort, although the differences are statistically significant, the ordering of categories is not consistent. Much of the effect of parental education on the entry of Year 12 graduates is carried through the expectations of significant others, school achievement, self-concept of ability and type of school attended.

Higher Education Participation

The results in Panel C of Table 8 show the strong association between parental education and participation in higher education. The combination of the effects on Year 12 completion rates and on entry rates from Year 12 to higher education produces quite large differences among categories of parental education. In the mid 1990s young people from families in which the parent had a post-secondary qualification were twice as likely to participate in higher education as young people from families in which the parent had not

attended secondary school. The most obvious feature of the results in Panel C is the effect of having a parent with a post-secondary qualification -- differences in participation rates between this category and the remaining three categories are by far the largest differences. By comparison, the differences among the three other categories are more modest.

Participation in higher education increased for all categories of parental education between the early 1980s and the mid 1990s. This increase was not always consistent. The association between parental education and higher education participation was greatest in the mid 1980s and participation in higher education declined absolutely for the lowest two categories of parental education between the early and mid 1980s.

Nor was the relative increase the same for all categories. Across the 14 years of the study participation rates for the post-secondary and some secondary categories increased by about two-thirds, while those for *Completed secondary* and *Primary* doubled. These different rates of increase imply some convergence in higher education participation among the categories of parental education. Although there were still substantial differences among these categories in the mid 1990s, these differences were somewhat less than for previous cohorts.

Removing the effects of family and personal characteristics, particularly the correlates of parental education such as parental occupation and family wealth, reduces the differences in higher education participation among the categories of parental education. The adjusted rates highlight a major feature of the relationship between parental education and higher education participation -- that the effect is carried principally by the post-secondary category and that there is relatively little difference among the other three categories. The important point, however, is that there is an effect of the level of parental education on the participation of young people in higher education even after adjustment for the correlates of parental education.

The second level of adjustment shows that much of the effect of parental education on higher education participation is carried through a vector of school experiences and post-school expectations. For the most recent cohort, the difference among the categories is reduced to a mere six percentage points, although this remains statistically significant, suggesting that the level of parental education influences the likelihood of the participation of young people in higher education by age 19.

TAFE

In the mid 1990s, there was an inverse relationship between parental education and participation by young people in non-apprenticeship TAFE programs -- young people with parents with lower levels of parental education were more likely to participate in TAFE than were young people with parents who had higher levels of education. The absolute difference between the highest and lowest categories is moderately large -- some 15 percentage points. In relative terms it is perhaps stronger. The children of parents

who had never attended secondary school were more than twice as likely to participate in TAFE by age 19 as were the children of parents with post-secondary qualifications.

The results for the most recent cohort are not typical of those for earlier cohorts. In the mid and late 1980s there was no effect of parental education on participation in TAFE and in the early 1980s it was the children of parents whose highest educational attainment was secondary school who were more likely to attend TAFE (and the differences among categories was substantially smaller). The results in Panel D, then, indicate that there has been a shift in the early 1990s in the social profile of young people participating in TAFE towards greater participation by young people from lower parental education backgrounds.

Statistical adjustment at either level makes little difference to the results. For the most recent cohort, the relative and absolute size of the participation of young people with parents who did not attend secondary school are more or less unchanged by adjustment -- the effect of parental education is not due to other family or personal characteristics or to school experiences or post-school expectations.

Apprenticeships

Apprenticeships are more likely to be undertaken by young people whose parents have completed secondary school. Young people whose parents have a post-school qualification were least likely to undertake an apprenticeship. This pattern appears to be at variance with the suggestion in regard to parental occupation that sons follow in their father's footsteps as far as apprenticeships are concerned. Parental education, however, is principally based on mother's education -- hence the link between father's education and participation in apprenticeships may not be evident.

The youngest cohort reflects the most common pattern across the cohorts -- apprenticeship participation rates for the post-secondary category are less than half those for the completed secondary category with the rates for the other two categories somewhere in between. The only major exception to this pattern was in the late 1980s when the apprenticeship participation rate for the *Primary* category was relatively high at 23%. The overall decline in apprenticeships appears to have affected this category of youth quite markedly because by the mid 1990s participation had almost halved to 13%.

The first level of adjustment reduces the absolute differences among the participation rates for each cohort but the remaining differences are statistically significant and usually show a similar pattern. Certainly this is the case for the most recent cohort. The second level of adjustment tends to reduce the differences even further and the remaining differences for the most recent cohort are not statistically significant. For this cohort at least the effect of parental education on participation in apprenticeships operates through the expectations of significant others, school achievement, self-concept of ability and the type of secondary school attended.

Post-School Education

The feature of the relationship between parental education and post-school education and training is the higher participation rate of young people classified as having parents with post-secondary education. In the earlier cohorts there was also a tendency for the lower categories of parental educational attainment to be associated with lower levels of participation. By the mid 1990s this had disappeared -- there was little difference among the lower three categories. All that remained was the difference between those three categories and the *Post-secondary* category. At the same time, the absolute level of participation for the *Post-secondary* category declined from 86% in the late 1980s to 79% in the mid 1990s. Consequently the differences in post-school participation associated with categories of parental education are smaller in the mid 1990s than for any of the earlier cohorts.

There are smaller differences among the participation rates that are adjusted for family and personal characteristics. In the early 1980s the relationship between parental education and post-school participation disappeared altogether after adjustment, indicating that the observed relationship for that cohort was entirely an artefact of parental education's association with other background characteristics. There is a similar, but not quite as pronounced tendency for the most recent cohort. Interestingly, in the mid 1990s, although the differences among the rates are significant, the pattern is not consistent. The adjusted post-school participation rate for the *Primary* category is only marginally lower than for the *Post-secondary* category and higher than for either of the other two categories.

Family Wealth

A substantial component of government equity policies is predicated on the assumption that family poverty can interfere with successful participation in education. The converse is also likely to be true -- family wealth can assist children's participation in education. There is a myriad of mechanisms through which family resources can affect schooling. Children in poor families may need to find a job at the earliest opportunity to supplement family income, may lack access at home to educational resources such as encyclopaedias, reference books, computers and the internet, may lack access to special tuition, and so on. Similarly successful participation in many forms of post-compulsory education often requires the postponement of employment or acceptance of lower wages (in the case of apprenticeships and traineeships). Families that have adequate resources can subsidise their children during this period and help to pay for the costs of education.

Family income, while not a measure of wealth, would probably be a very good indicator of the resources a family has available to assist with the education of its children. Our experience, however, has shown that this is information which young people are either unwilling, or unable, to provide about their parents. Instead we have used a measure based on household characteristics and on the presence of certain major consumer durables in the household. In Table 9 this measure is presented as three categories -- the top 25 per cent of the sample (labelled *wealthy*), the middle 50 per cent, and the bottom 50 per cent of the sample (labelled *poor*).

Table 9 Year 12 Completion and Selected Forms of Educational Participation by Age 19, by Family Wealth: 1980, 1984, 1989 and 1994

Cohort born in . . .	1961			1965			1970			1975		
At age 19 in . . .	1980			1984			1989			1994		
Level of adjustment . . .	0	1	2	0	1	2	0	1	2	0	1	2
	%	%	%	%	%	%	%	%	%	%	%	%
Panel A: *Year 12 Completion*												
Wealthiest 25%	**48**	41	38	**52**	44	41	**67**	62	58	**85**	82	80
Middle 50%	**36**	36	36	**36**	37	39	**54**	54	54	**78**	79	78
Poorest 25%	**28**	34	37	**26**	35	36	**49**	53	58	**72**	74	76
Panel B: *Entry to Higher Education from Year 12*												
Wealthiest 25%	**55**	53	50	**57**	53	53	**59**	53	49	**62**	56	54
Middle 50%	**47**	48	48	**46**	47	47	**51**	52	51	**47**	47	47
Poorest 25%	**48**	50	54	**41**	47	49	**40**	46	53	**38**	43	47
Panel C: *Higher Education Participation*												
Wealthiest 25%	**29**	25	22	**31**	25	23	**39**	33	28	**53**	46	43
Middle 50%	**19**	19	19	**17**	18	19	**28**	28	28	**37**	38	37
Poorest 25%	**16**	20	22	**11**	18	19	**20**	24	29	**27**	32	36
Panel D: *TAFE (Non-Apprenticeship) Participation*												
Wealthiest 25%	**16**	16	16	**19**	19	19	**18**	17	18	**17**	19	19
Middle 50%	**13**	13	13	**15**	15	15	**17**	17	17	**20**	20	20
Poorest 25%	**12**	13	12	**13**	12	12	**20**	20	19	**22**	21	21
Panel E: *Participation in Apprenticeships (inc. Traineeships)*												
Wealthiest 25%	**21**	22	22	**18**	20	21	**14**	16	17	**12**	14	15
Middle 50%	**18**	18	18	**19**	18	17	**21**	20	20	**15**	15	15
Poorest 25%	**15**	14	13	**13**	13	13	**18**	16	15	**15**	13	12
Panel F: *Post-School Educational Participation*												
Wealthiest 25%	**62**	58	56	**70**	66	65	**70**	66	62	**75**	72	70
Middle 50%	**48**	48	48	**54**	54	54	**64**	65	65	**67**	68	67
Poorest 25%	**42**	46	48	**43**	49	51	**60**	63	66	**59**	62	65
Panel G: *Sample Sizes*												
Wealthiest 25%	743			661			429			821		
Middle 50%	1614			1408			858			1521		
Poorest 25%	791			417			415			848		

See *Notes to Tables*

Year 12

The results in Panel A of Table 9 show that family wealth is strongly associated with completion of Year 12. In the mid 1980s students from the wealthiest quartile were twice as likely to complete Year 12 as students from the poorest quartile. Growth in Year 12 completion rates since then, however, has been disproportionately stronger for students from the poorest quartile and from the middle 50 per cent. By the end of the 1980s students from the wealthiest quartile were only 20 per cent more likely to complete Year 12 than students from the poorest quartile and only 10 per cent more likely by the mid 1990s. The last decade in particular has been one of reduced inequalities in terms of Year 12 completion -- both relatively and absolutely -- for students from poorer family backgrounds.

Family wealth measures are clearly associated with, though perhaps separable from, parental occupation and education. It should be expected that some of the observed relationship between our wealth measure and school completion reflects the social and cultural capital associated with these factors rather than differential access to resources.

The first level of adjustment tests this expectation and suggests that it is correct. For each of the cohorts the first level of adjustment results in a marked reduction in the difference between the school completion rates of the wealthiest and poorest quartiles. For the 1961 cohort, for instance, the observed difference between the wealthiest and poorest quartiles is 20 percentage points, which falls by 13 percentage points to only 7 at the first level of adjustment. One of the recurring results of this section is the declining effect of family socio-economic status on school completion across the four cohorts. This means that the effect of adjustment for these factors should be reduced for the 1975 cohort -- and this is the case. The observed difference of 13 percentage points declines by only five percentage points to a difference of eight. Even so, there does seem to be a residual effect of family wealth on school completion -- and in absolute terms that effect was seven percentage points at the start of the 1980s and eight percentage points in the mid 1990s.

The values for the second level of adjustment show that for much of the 1980s there was little direct effect of family wealth on school completion -- that the wealth effects were carried by such factors as school performance, school system attended and the post-school expectations of parents, teachers and friends. The results in Table A1 show that these differences were not statistically significant for any of the four cohorts.

Entry to Higher Education from Year 12

Family wealth plays a role in the transition from Year 12 to higher education. In the mid 1990s, Year 12 graduates from the wealthiest quartile were nearly two-thirds more likely to enter higher education, and Year 12 graduates from the middle 50% were nearly one-quarter more likely to enter higher education, than Year 12 graduates from the poorest quartile. These are the largest of any of the differences in the four cohorts.

The results in Panel B in Table 9 show that it has become progressively less likely that Year 12 graduates from the poorest wealth quartile will enter higher education by age 19.

Entry rates for the highest quartile systematically increased during the 1980s to the mid 1990s -- 55%, 57%, 59% and 62% for each of the four cohorts respectively -- while entry rates for the middle 50% were more or less constant -- 47%, 46%, 51% and 47%. Year 12 graduates from the lowest quartile, however, experienced an absolute decline in entry rates across the four cohorts -- 48% in the early 1980s, 41% in the mid 1980s, 40% in the late 1980s and 38% in the mid 1990s. These absolute changes in entry rates mean that Year 12 graduates from the poorest wealth quartile are both relatively and absolutely less likely to enter higher education in the mid 1990s than at any other time covered by the data in this report.

Statistical adjustment of entry rates to remove the effects of the family and personal characteristics that may be correlates of wealth reduces the absolute differences among the higher education entry rates of the three wealth categories. In fact, for the cohorts spanning the 1980s, the remaining differences are not statistically significant, which implies that wealth was not having any independent effect on entry to higher education. For the most recent cohort, however, the story is quite different -- there is a residual absolute difference of 13 percentage points between the wealthiest and poorest quartiles and this difference is statistically significant. Wealth (and the lack of it) has re-emerged during the early 1990s as a factor that influences entry to higher education from Year 12.

Further adjustment of the entry rates by removing the effects of school experiences and post-school expectations has similar consequences. For the first three cohorts, adjustment results in differences among the wealth categories that are either not statistically significant or not consistent with a positive relationship between family wealth and higher education entry, or both. In the mid 1990s, however, the difference between Year 12 graduates from the wealthiest quartile and Year 12 graduates from the middle and poorest categories remains statistically significant. In the mid 1990s wealth has an effect on entry to higher education from Year 12 that is independent not only of other family and personal characteristics, but also of school experiences and post-school expectations.

Higher Education Participation

Young people from wealthy families participate in higher education at a substantially higher rate than young people from poorer families. For the most recent cohort, about one in two persons from the wealthy quartile participate in higher education compared with about one in four for the poorest quartile -- young people from the wealthy quartile participate in higher education at about twice the rate of young people from the poorest quartile.

There are two opposing trends in changes in the relationship between family wealth and participation in higher education -- a relative *decline* in the effect of family wealth on the completion of Year 12 and a relative *increase* in its effect on the transition from Year 12 to higher education. These two effects more or less balance each other -- the relative differences between the poorest and wealthiest quartiles, and between the poorest and middle two quartiles, are only marginally stronger in the mid 1990s than the early 1980s, and almost unchanged from the late 1980s. By far the strongest association between

family wealth and participation in higher education was in the mid 1980s, and by comparison the more recent results are substantially more equitable.

As has been the case for the other components of socio-economic status and their relationship to participation in higher education, removing the effects of correlates of wealth leads to quite substantial reductions in the differences in rates of higher education participation among the categories of family wealth. For the most recent cohort, for instance, adjustment almost halves the observed 26 percentage point difference between the wealthiest and poorest quartiles to 14 percentage points. Yet for all but the earliest cohort, these differences remain statistically significant. Hence the wealth measure taps an aspect of the influences on participation in higher education that is distinct from our other measures of family background.

Adjustment for school experiences and post-school expectations reduces the differences in higher education participation among the categories of family wealth even further. For the 1961 and 1970 cohorts the remaining differences may be due to random variation. For the most recent cohort, however, a residual, direct effect of family wealth remains even after removing as many other possible sources of difference as our data permit.

The two most recent cohorts span an interesting period in higher education policy. HECS was introduced in 1989, probably one year after most members of the 1970 cohort had first entered higher education. Hence the entry and participation of members of this cohort in higher education was probably unaffected by concerns over the payment or re-payment of tuition fees. The entry and participation of the youngest cohort, however, was in a period in which HECS was already in place. The comparison of the patterns of entry to, and participation in, higher education may reflect this change.

The entry rates of the wealthiest quartile increased both absolutely and relatively compared to the other categories during this period. Some caution needs to be taken in a too simple interpretation of this observation. Observations for the earlier cohorts indicate that this change may be no more than a continuation of a trend that was already occurring before the introduction of HECS -- a change probably driven by the changing composition of the Year 12 population. The changes in the adjusted values between the 1970 and 1975 cohorts may, however, are consistent with an effect of the introduction of HECS on the social composition of entry to Year 12 -- but hardly conclusive.

Comparison of the participation rates of the wealth categories in the 1970 and 1975 cohorts leads to mixed conclusions. The observed rates suggest that there has been no change in the wealth composition of young participants in higher education. This is more or less supported by the participation rates after adjusting for other family and personal characteristics. At the second level of adjustment, however, there is a clear effect of wealth on participation for the 1975 cohort that was not evident for the 1970 cohort.

There are other changes in Australian society apart from the introduction of HECS that may have influenced the relative ability of the children from wealthy and poor families to participate in higher education. These data were not collected with the intention of

determining the effect of HECS on the ability of young people from different social backgrounds to participate in higher education -- and at the level of observed rates we see no change. It is only in the adjusted rates that there is a suggestion of a relative (though not absolute) increase in the effect of wealth on participation in higher education -- an increase that happens to coincide with the introduction of HECS.

TAFE

Panel D in Table 9 shows that family wealth has a small, but nevertheless statistically significant, relationship with participation in non-apprenticeship TAFE programs. In the mid 1990s young people from the poorest quartile of family wealth were more likely to participate in TAFE programs than young people from either the wealthiest or middle two quartiles of family wealth. The differences are not large -- 2 percentage points between the poorest quartile and the middle 50% and then a further 3 percentage points between the middle 50% and the wealthiest quartile.

The situation in the mid 1990s represents a reversal of the relationship in the early 1980s when participation in TAFE was somewhat more likely among young people from the wealthiest quartile. Across the 14 years of this study there has been a gradual change in the direction of the relationship -- while participation by the wealthiest quartile has been reasonably stable, participation from the poorest quartile of family wealth has almost doubled. This change is consistent with the results for parental occupation and education that we have already discussed.

The effects of adjusting for the correlates of family wealth are usually slight. Nevertheless, for two of the cohorts (including the most recent) they are sufficient to change statistically significant relationships into non-significant relationships. In the main, the apparent relationships between wealth and participation in TAFE are due to the relationship of family wealth with other family and personal characteristics. Family wealth, as such, has no effect on participation in TAFE, other factors equal.

Apprenticeships

The relationship between family wealth and participation in apprenticeships is quite small in terms of absolute percentages, but the relative differences are often somewhat larger. In the mid 1990s there was a tendency for young people from the wealthiest quartile to have a slightly lower level of participation in apprenticeships. As with participation in TAFE, this represents a change in the relationship between family wealth and participation in apprenticeships over time. In the early 1980s participation was somewhat higher among young people from the wealthiest quartile; in the mid and late 1980s participation was higher for the middle 50%; and by the mid 1990s participation was higher among the three lowest quartiles of family wealth.

Statistical adjustment generally increased the estimates of apprenticeship participation for the wealthiest quartile and decreases it for the poorest quartile. This tended to strengthen the relationship for the earliest cohort when participation was higher for the wealthiest quartile. For the most recent cohort, however, any relationship between family wealth

and apprenticeship participation disappears. In the mid 1990s there was no direct effect of family wealth on participation in apprenticeships.

Post-School Education

Young people from the wealthiest quartile of families are more likely to participate in some form of post-school education than young people from the middle 50% of wealth, and young people from the middle 50% of wealth are more likely to participate in post-school education than young people from the poorest quartile of families. In the mid 1990s, young people from the wealthiest quartile were about 1.25 times more likely to participate in post-school education than young people from the poorest quartile.

The strength of this relationship has changed over time. It was substantially stronger in the early and mid 1980s, but weakest in the late 1980s. The results for the mid 1990s represent a marginal increase in the differences in post-school participation among the categories of family wealth.

The first set of adjusted values tells a similar story -- the differences among categories are smaller, but preserve the pattern of relationship of the observed participation rates. Interestingly, the effect of wealth disappears altogether for the 1970 cohort, but then reappears quite strongly for the 1975 cohort. The second level of adjustment reduces the differences somewhat further and indeed for the most recent cohort, the effect of wealth is no longer statistically significant. This does not mean that the efficacy of family wealth on post-school educational participation has vanished, merely that its influence is being expressed through its effect on school achievement and the perceived expectations of significant others.

Summary

This chapter reviewed changes in the patterns of participation in education of young people from different socio-economic backgrounds. The effects of three components of socio-economic status -- parent's occupational status, parent's education, and family wealth -- were examined separately. It was found that for:

Year 12

Young people from higher socio-economic backgrounds were more likely to complete Year 12 than were young people from lower socio-economic backgrounds. The effect of socio-economic status on Year 12 completion, however, has declined between 1980 and 1994, as Year 12 has increasingly become a universal qualification.

- Some of the effect of *parental occupation* on school completion was the result of other family background characteristics, and some by school experiences and post-school expectations. For the youngest two cohorts, all of the relationship was transmitted through these other characteristics.
- Even after adjustment for correlates of *parental education*, there were still differences in completion rates among the categories of parental education.

- There was little change in the effect of *family wealth* on Year 12 completion after adjustment for other family background characteristics. The remaining effect of family wealth, however, was transmitted through school experiences and post-school expectations.

Entry to higher education from Year 12

Year 12 graduates from higher socio-economic backgrounds were more likely to enter higher education than Year 12 graduates from lower socio-economic backgrounds. The difference between the entry rates of Year 12 graduates from high and low socio-economic backgrounds has increased between 1980 and 1994.

- The 1970 and 1975 cohorts entered higher education before and after the introduction of HECS respectively. The difference between the entry rates of Year 12 graduates from high and low socio-economic backgrounds was greater in the 1975 cohort than for the 1970 cohort. This could, however, be the continuation of a trend evident for previous cohorts and driven by the changing composition of the population of Year 12 graduates.

- Some of the effect of *parental occupation* on entry to higher education was due to other family background characteristics, and some to school experiences and post-school expectations. For the most recent cohort, there was a statistically significant effect of parental occupation, even after removing these other effects.

- Much of the effect of parental education on the entry of Year 12 graduates to higher education was transmitted through the expectations of significant others, school achievement, self-concept of ability and type of school attended.

- Family wealth (and the lack of it) has re-emerged during the early 1990s as a factor that influences entry to higher education from Year 12, independently of other family background characteristics.

Higher education

Young people from higher socio-economic backgrounds were more likely to participate in higher education than young people from lower socio-economic backgrounds. Compared with the early 1980s, in the mid 1990s the effect on participation in higher education of all three components of socio-economic status was almost unchanged. There was also little indication of any change between the late 1980s and the mid 1990s in the effect of socio-economic status on participation in higher education -- the period that coincided with the introduction of HECS.

Much of the relationship between socio-economic status and participation in higher education can be attributed to other background characteristics or to differences in educational experiences and post-school expectations. For the 1975 cohort, however, there was an effect of *parental occupation* and *family wealth* even after adjustment for these other characteristics.

TAFE (non-apprenticeship)

The socio-economic profile of young people participating in non-apprenticeship TAFE courses changed in the period 1980 to 1994. In the early 1980s young people from higher socio-economic backgrounds were more likely to participate in non-apprenticeship TAFE courses than young people from lower socio-economic backgrounds. By the mid 1990s the reverse was true.

Young people from a broad range of backgrounds accessed non-apprenticeship TAFE courses. Hence statistical adjustment generally results in only slight changes to estimates of participation rates.

Apprenticeships

There were differing effects of the three components of socio-economic status on participation in apprenticeships and traineeships. The children of parents in the *Skilled* occupational category were most likely to participate in an apprenticeship, as were the children of parents in the *Completed secondary* category. The wealth profile of apprentices declined marginally over time and in the mid 1990s young people from the wealthiest quartile were somewhat less likely to enter apprenticeships.

Post-school Education and Training

Young people from higher socio-economic backgrounds were more likely to participate in post-school education and training than young people from lower socio-economic backgrounds. Differences in the level of participation in post-school education and training between categories of socio-economic status declined in the period 1980 to 1994.

- Higher parental occupational prestige was generally associated with a higher likelihood of participation in post-school education and training. The size of the difference in participation rates between the highest and lowest categories was around 25 percentage points for each of the cohorts. The increase in overall participation rates implies that the relative difference has declined -- but not by much.

- Young people from the *Post-secondary* parental education category had higher rates of participation in post-school education and training than young people from other categories of parental education. The differences among the categories of parental education were less for the 1994 cohort than for any of the three preceding cohorts.

- Young people from the wealthiest quartile of families were more likely to participate in post-school education and training by age 19. Differences were substantially stronger in the early and mid 1980s, but least in the late 1980s. Compared with the late 1980s, the results for the mid 1990s show marginally larger differences among categories of family wealth -- but still an overall decline in differences between the early 1980s and the mid 1990s.

7. ETHNICITY

The Commonwealth Government has had a policy of encouraging immigration throughout the period covered by this study. In Australia there has been concern to ensure that there are equitable educational opportunities for immigrants and for their children. Various programs designed to reduce any disadvantage in schooling associated with migrancy and language have been in place for many years.

The measures of ethnicity in this section are based principally on the country of birth of the student's father. Results for three broad categories are presented: students whose fathers were born in Australia (Australian-born); students whose fathers were born in another country in which English is the major language (English-born); and students whose fathers were born in some other country (non-English-born). These three categories reflect differences of both migrancy and language. Australian-born and English-born differ in migrancy, but not language. The non-English-born differ from the Australian-born in both migrancy and language and from the English-born in terms of language but not migrancy.

The three-way distinction based on father's country of birth does not capture the full diversity of a student's ethnic background. At the most basic, the distinction ignores the country of birth of the student's mother and the complexities of the combination of father's and mother's country of birth. Further, it does not take into account possible differences between countries within the broad categories. Measures of ethnicity based on country of birth also ignore the variety of ethnic groups within a country and issues of self-identification with particular cultural and religious groups. In particular, indigenous Australians are not separately identified. A broad-brush approach to the influence of ethnicity on school completion, however, is almost unavoidable in a study based on samples of students. There are usually too few students from particular ethnic categories to permit more detailed analyses.

We do not investigate the possible interactions of ethnicity with other characteristics. For instance, it has been claimed that some ethnic groups give low priority to the educational needs of females (Brumby, 1989:46). Investigation of such claims would stretch the sample sizes of our surveys beyond the bounds of credibility, although that is not to discount their possible importance for policy and programs.

Year 12

The results in panel A of Table 10 show a generally small, but clear and consistent, advantage in school completion for students from non-English-speaking backgrounds (NESB) compared with students from Australian-born and English-born backgrounds. The difference between Australian-born and non-English-speaking born was five percentage points in 1980, 12 percentage points in 1984, five in 1989 and nine in 1994. The relative advantage of students from a non-English-speaking background is no less in 1994 than it was in 1980.

Table 10 Year 12 Completion and Selected Forms of Educational Participation by Age 19, by Father's Country of Birth: 1980, 1984, 1989 and 1994

Cohort born in . . .	1961			1965			1970			1975		
At age 19 in . . .	1980			1984			1989			1994		
Level of adjustment . . .	0	1	2	0	1	2	0	1	2	0	1	2
	%	%	%	%	%	%	%	%	%	%	%	%
Panel A: *Year 12 Completion*												
Australian-born	**35**	34	35	**35**	34	36	**55**	54	55	**76**	77	76
English-born	**33**	32	32	**33**	31	34	**56**	56	56	**79**	79	77
Non-English-born	**40**	44	39	**47**	50	46	**60**	63	59	**85**	84	82
Panel B: *Entry to Higher Education from Year 12*												
Australian-born	**46**	46	47	**48**	48	48	**49**	48	49	**48**	47	48
English-born	**60**	59	54	**50**	48	45	**51**	51	50	**50**	48	44
Non-English-born	**59**	60	58	**48**	50	50	**54**	58	54	**52**	56	56
Panel C: *Higher Education Participation*												
Australian-born	**18**	18	19	**18**	17	18	**27**	26	28	**36**	36	37
English-born	**23**	22	22	**17**	15	17	**28**	29	28	**40**	38	36
Non-English-born	**26**	27	23	**23**	25	20	**33**	36	31	**45**	46	44
Panel D: *TAFE (Non-Apprenticeship) Participation*												
Australian-born	**13**	13	13	**16**	16	16	**18**	19	18	**20**	21	21
English-born	**11**	11	11	**16**	17	17	**19**	19	20	**18**	18	19
Non-English-born	**12**	14	14	**18**	17	16	**18**	16	17	**21**	19	18
Panel E: *Participation in Apprenticeships (inc. Traineeships)*												
Australian-born	**20**	20	19	**19**	19	19	**18**	18	17	**15**	15	14
English-born	**20**	19	19	**15**	14	13	**21**	21	21	**15**	14	15
Non-English-born	**12**	12	15	**19**	18	20	**21**	20	22	**11**	11	13
Panel F: *Post-School Educational Participation*												
Australian-born	**49**	48	49	**54**	54	55	**63**	63	63	**66**	66	67
English-born	**50**	49	47	**55**	53	53	**65**	65	67	**67**	67	66
Non-English-born	**49**	52	50	**63**	64	61	**71**	73	70	**72**	72	70
Panel G: *Sample Sizes*												
Australian-born	2506			1912			1169			2179		
English-born	374			339			190			397		
Non-English-born	552			564			377			587		

See *Notes to Tables*

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It is important to find out whether the observed differences in school completion rates between categories of ethnic background are indeed 'ethnic differences' or are instead the result of other factors related to ethnicity. It is unlikely that migrant or recent migrant groups will be advantaged economically compared with non-migrant groups. Rather such groups are likely to be economically disadvantaged. This is the implication of the values for the first three cohorts in Table 10 -- after adjustments are made for family background the differences in school completion rates between the Australian-born and non-English-speaking born groups increase for all but the most recent cohort. This pattern indicates that the effect of ethnicity on school completion for those cohorts is somewhat larger than shown by the observed rates. For the most recent cohort, however, there is a marginal decline in the difference between the completion rates of students whose fathers were born in Australian or a non-English-speaking country respectively.

The second level of adjustment for school experiences and post-school intentions produces the opposite result -- the differences between the completion rates of the three categories are generally reduced compared with the rates after the first level of adjustment, and often marginally compared with the observed rates. This suggests that some of the differences in school completion rates between categories are transmitted through the achievement levels of the students and the expectations of their parents, teachers and friends. The remaining differences are small but still consistent with the view that students from non-English-speaking backgrounds have somewhat higher rates of school completion that students with fathers who were born in Australia.

Entry to Higher Education from Year 12

In the early 1980s there was a substantial difference between the rates of entry to higher education of Year 12 graduates with fathers born in a non-English-speaking country (59%) and of Year 12 graduates born in Australia (46%). This difference has not been evident in any of the later cohorts, despite a slight (but statistically not significant) tendency in the late 1980s and mid 1990s for Year 12 graduates with non-English-speaking fathers to have higher transition rates.

Adjustment of the transition rates provides a slightly different story for the 1975 cohort. Students from non-English speaking backgrounds are, in terms of entry to higher education, disadvantaged by their family and personal background characteristics. Removing the effect of these differences usually increases the entry rates for Year 12 graduates from a non-English-speaking background by two or three percentage points and sometimes reduces the entry rates for Year 12 graduates with an Australian background by a percentage point. For the 1975 cohort this is sufficient .o create a statistically significant difference. A non-English speaking background, with the effect of other confounding variables removed, contributes to higher entry from Year 12 to higher education.

Interestingly, for the most recent cohort at any rate, there is little evidence that this effect of ethnic background is being carried by parental expectations. If this were the case, then the second level of adjustment should lead to a reduction in the estimate of entry rates (as

for the 1970 cohort). For the 1975 cohort, however, the estimate for the non-English born category is the same for both the first and second level of adjustment.

Higher Education Participation

The values in Panel C of Table 10 show a consistent tendency for young people from a non-English-speaking background to be about a quarter more likely to participate in higher education than young people from an Australian background. Their advantage was somewhat greater in the early 1980s, but there has been little change since then. The difference is based on marginally higher probabilities of completion of Year 12 followed by a marginally higher probability of entry to higher education from Year 12.

DETYA monitors the higher education participation of students from non-English-speaking backgrounds (NESB) as part of the *Higher Education Equity Programme*. The programme targets the more narrowly defined category of NESB persons who arrived in Australia within the last 10 years. Even for this group, however, participation rates appear to be slightly above the national average (DETYA, 1999). Postle *et al.* (1997) note that the mean participation rate for NESB students may be the result of the substantially higher participation of migrants from some Asian and Eastern European countries offset by the lower participation of migrants from the Middle East and Southern Europe.

Apart from the different definitions of NESB, comparison of the results presented in this chapter with other analyses needs also to consider the age-distribution of the populations. Our comparisons are of like with like -- young NESB with young Australian-born. Migrant populations are likely to have age-distributions that differ from the age-distribution of the rest of the population. To the extent that migrant populations are younger and coincide with the ages of maximum participation in higher education, comparisons of population-wide higher education participation rates may not be very meaningful.

The first level of statistical adjustment in Panel C slightly strengthens the relationship. The participation in higher education of young people from non-English speaking backgrounds is reduced by the effect of their other family and personal characteristics. When these effects are removed, the differences in participation associated with ethnicity often increase by one or two percentage points. The difference in the higher education participation rates of the Australian-born and Non-English-speaking born categories is 10 percentage points for the most recent cohort -- a substantial difference.

The second level of adjustment addresses differences due to a vector of characteristics including school experiences and post-school intentions -- perceived expectations of parents, teachers and friends, self-concept of ability, achievement and type of school. When these differences are removed, the higher education participation rates of the Australian-born and the non-English-speaking categories tend to converge, suggesting that young people from non-English speaking backgrounds are relatively advantaged by these characteristics.

TAFE

Panel D shows that there are no differences among the three categories of father's country of birth for any of the four cohorts in the extent to which young people participate in TAFE programs. There were no differences in the early 1980s and there were still no differences in the mid 1990s. All three categories shared more or less equally in the growth in TAFE participation during that time.

Statistical adjustment adds nothing to this description. If the adjusted rates differ from the observed rates, it is usually by only one or two percentage points. Participation in TAFE is not influenced by ethnic background.

Apprenticeship

In the early 1980s there was a clear difference between the Australian-born and non-English-born categories -- participation in apprenticeships for the non-English-born category was a little over half of that for the Australian-born category. From the mid 1980s onwards, however, there is no statistically significant difference.

The most recent cohort, however, shows some sign of a re-emergence of this difference. When the first level of adjustment is made, the difference in apprenticeship participation rates among the three categories is statistically significant -- the participation in apprenticeships of young people from non-English-speaking backgrounds is a little over two-thirds of the corresponding rate for young people from an Australian-born background.

Removing the effects of the second block of characteristics means that the remaining differences among the categories are not statistically significant. For the most recent cohort, then, there is an effect attributable to father's country of birth, but this is mediated by the group of measured characteristics relating to school experiences and post-school intentions.

Post-School Education

The differences in Panel F are, more or less, the sum of the differences in participation in higher education, TAFE and apprenticeships. The strongest relationship was the greater higher education participation rates for young people from a non-English speaking background. There was some slight indication of a countervailing tendency in apprenticeship, but no difference for TAFE. Hence, apart from the 1961 cohort, the participation rates for post-school education are higher for young people from a non-English-speaking background than for young people from an Australian-born background.

There is some sign that the difference has declined since the mid 1980s -- from nine percentage points to eight percentage points to six percentage points. The increase in overall participation rates during this time means that the convergence has been greater than suggested by the decline in absolute differences. For the most recent cohort, the post-school education participation rate for the non-English-speaking category (72%) was less than one-tenth greater than that for the Australian-born category (66%).

Removing any differences attributable to other family or personal characteristics results in little change to the observed values -- but makes that the results for the most recent cohort no longer statistically significant. Hence we can say that for the mid 1990s there is insufficient evidence to conclude that there are differences in post-school education participation associated with father's country of birth. The second level of adjustment reduces the differences among the categories by about half and there is clearly no statistically significant difference.

Discussion

The results in Table 10 may be contrary to the general expectation about the effect of ethnic background on school completion and participation in post-school education. In a summary of the literature, however, Sturman notes that '. . . it would appear that when aggregated data are used, compared with other students, students from that group classified as non-English speaking, even after statistical adjustment is made to take account of other factors such as social and economic status and educational achievement, fare well on quite a number of indicators of educational experience' (1997: 62).

Various school equity programs that have operated throughout the period covered by this study have identified students who come from a non-English-speaking background as disadvantaged. Indices for the disadvantaged schools program, for instance, have used the percentage of students from a non-English-speaking background as an indicator of school disadvantage. Similar considerations have been carried forward into the current National Equity Program for Schools (NEPS).

The results presented here may simply reflect the efficacy of such programs. Year 12 graduation rates are not the only measure of disadvantage in schooling. It may be that students from the non-English-born category have lower levels of attainment in school -- a situation which would make their higher Year 12 graduation rates and entry rates to university (Williams *et al.*, 1993b) all the more remarkable.

There are at least two important caveats on these results. First, we have used a broader category of ethnicity than in some studies. Perhaps a measure that focused directly on the language mainly spoken in the homes of young people would show a different pattern. If this is the case, however, it implies that any of the positive outcomes we have reported in this chapter are all the more remarkable. Those young people from homes in which a language other than English is principally spoken are (apart from some Indigenous youth) presumably a subset of the category we have identified as *Non-English Speaking*. This would imply even stronger positive educational outcomes for the remainder of the category.

The second caution about any interpretation of these results is that they are for young people who were already in Australia at age 10 (for the 1965 and 1970 cohorts) or age 14 (for the 1961 and 1975 cohorts). At the minimum, we know that they have participated in some schooling in Australia. Quite different results might be observed for young people

from non-English speaking background who arrived in Australia somewhat later or for adults from non-English speaking backgrounds.

Summary

This chapter has compared the school completion and post-school educational participation rates of young people with a father born in a mainly non-English speaking country with the corresponding rates of young people with a father born in Australia. It was found that:

- There was an advantage in Year 12 completion for students from non-English-speaking backgrounds compared with students from Australian-born backgrounds. The advantage was no less in 1994 than it was in 1980.

  The difference between the Year 12 completion rates of students from non-English-speaking backgrounds and students from Australian-born backgrounds often increased slightly when the influence of other background characteristics was removed. Much, but not all, of the effect of ethnicity was transmitted through school experiences and post-school expectations.

- There was some indication that Year 12 graduates from non-English-speaking backgrounds were more likely to enter higher education than students from Australian-born backgrounds, but the effect was not strong, especially for more recent cohorts.

  Once the influence of other, associated, background characteristics was removed, however, the positive influence of a non-English-speaking background on entry to higher education became more evident. For the most recent cohort, there was no indication that this effect was due to school experiences or post-school expectations.

- Young people from a non-English-speaking background were about a quarter more likely to participate in higher education than young people from an Australian background.

- There were no differences among the three categories of father's country of birth for any of the four cohorts in the extent to which young people access TAFE programs.

- In the early 1980s participation in apprenticeships for the non-English-born category was a little over half of that for the Australian-born category. From the mid 1980s onwards, however, there was no statistically significant difference.

- Young people from a non-English-speaking background have higher rates of participation in post-school education and training than young people from an Australian-born background.

- The advantage of the NESB category in terms of post-school education and training declined between 1980 and 1994. For the 1994 cohort, the difference between the two categories was not statistically significant after removing the associated effects of other background characteristics.

8. RURAL AND URBAN STUDENTS

The *1995 National Report on Schooling* notes that:

> Most of the interior of Australia is sparsely populated and more than 80% of the population is concentrated in a narrow strip along the eastern, south-eastern and south-western coasts. Australia is also highly urbanised, with nearly three quarters of its population living in cities of over 100,000 people. (MCEETYA, 1995: 1).

This chapter explores differences in Year 12 completion and post-school educational participation associated with population density quartiles that capture much of what is meant by *urban* and *rural.*

Education policies have consistently identified people from rural and isolated communities as in need of special assistance if they are to participate in education and training at levels comparable to those of people from urban areas. The National Board of Employment, Education and Training (NBEET), for instance, in *Towards a National Education and Training Strategy for Rural Australians* (1991) reported that despite on-going programs designed to redress the imbalance, the provision of post-compulsory education and training for non-metropolitan Australians remained uneven and inadequate.

The nature of this educational disadvantage depends, in part, on what is meant by the various categories employed to define geographic location, that is, how we determine whether people are in metropolitan, urban, regional, rural, remote or isolated areas. The drawing of borders is fairly arbitrary, but in its most general sense, when we write about rural or remote areas we are referring to areas of low population density and that are distant from large cities. It is these two characteristics -- low population density and distance from areas of high population density -- that define the educational disadvantage.

Low population density means that schools are likely to be smaller and hence less likely to be able to provide the full range of curriculum, particularly for the post-compulsory years (McKenzie *et al.*, 1996). It also means that students are likely to have to travel further to school with the inherent personal and financial costs entailed by that travel. At the extreme, students cannot attend school locally and either have to attend boarding school or engage in distance education. Other aspects of school attendance -- uniforms, textbooks, curriculum resources, and so on -- may be more expensive or unavailable. Similarly, post-school educational and cultural facilities are less likely to be located in areas of low population density -- as with other services, there are economies of scale. Again, the disadvantage lies in the psychological and financial costs of leaving home.

Overseas experience suggests that lower educational outcomes for young people in rural areas are not inevitable. In the US, for instance, school completion is highest in the rural and suburban areas and lowest in the cities. This may, of course, reflect processes of urbanisation and geographic segregation that are quite different from those in Australia (US Department of Education, 1993).

The measure of *urban* and *rural* used in this chapter is based on population density. Our measure begins with the school the respondent attended at age 14 (the 1961 and 1975 cohorts) or 10 (the 1965 and 1970 cohorts) was located. We then recorded the population density of the Local Government Area in which that school was located, listed the respondents from high density (urban) to low density (rural), and classified the respondents into quartiles.

There are other measures of rurality that can be used -- self-report of the size of the location in which the respondent grew up (Lamb *et al.*, 1998) and various combinations of area-based measures (Williams *et al.* (1982); DPIE (1991), Rousseax, (1994); Griffith (1996); d'Plesse (1993)). Some of these approaches tap issues of population density directly, others through measures such as the percentage of the workforce employed in primary industry or the percentage of sewered houses in a given area.

It has been noted that population density by itself does not predict school completion as well as a battery of predictors (Griffith, 1996). This is probably true. No doubt if we combined our measure of rurality with our measures of socio-economic status our ability to predict rates of Year 12 completion would improve. But that is not the point. We want to examine the effect of rural/urban differences on educational participation -- not an amalgam of possible sources of disadvantages that might be better examined separately. There are correlates of living in remote locations -- lower levels of parental education, employment in primary industry, and Indigenous status among others. There are, however, good reasons to expect living in an area of low population density to be associated with poorer educational outcomes regardless of any of these other factors -- and this issue is explored in this chapter.

The examination of rural-urban differences is made difficult because people move between regions -- especially in order to pursue educational opportunities. Unless such inter-regional movement is addressed, any educational disadvantage of rural areas can be over-estimated. Measures of rural-urban educational participation based on the current address of persons (including census data) may be confounded by the self-selection of persons who have moved from rural areas in order to undertake further education and training. The administrative enrolment databases for the vocational education and training and higher education sectors distinguish between permanent home and current term addresses of students. This distinction also quickly becomes problematic. Our measure of rurality is based on the school attended at the time the initial contact with the sample was made. Hence we measure the educational participation of young people who were in rural or urban areas in their late primary or early secondary schooling and subsequently move for whatever reason.

Our measure is simple and less than perfect. Indeed, it could be argued that what is required is a separate measure of rurality or isolation for each form of educational participation. Western *et al.* (1998), for instance, propose that an indicator of isolation for the higher education sector should include proximity to a higher education institution. Further, focusing as we do on a quartile of students who we define as rural, combines the truly remote or isolated (about 2.5% of the population under ABS (2909.0) definitions,

Table 11 Year 12 Completion and Selected Forms of Educational Participation by Age 19, by Rurality: 1980, 1984, 1989 and 1994

Cohort born in . . .	1961			1965			1970			1975		
At age 19 in . . .	1980			1984			1989			1994		
Level of adjustment . . .	0	1	2	0	1	2	0	1	2	0	1	2
	%	%	%	%	%	%	%	%	%	%	%	%
Panel A: *Year 12 Completion*												
Rural	**32**	35	38	**33**	34	36	**51**	53	57	**67**	72	73
Second quartile	**28**	28	31	**29**	33	34	**49**	52	54	**76**	78	78
Third quartile	**37**	35	34	**40**	38	39	**60**	56	55	**82**	80	80
Urban	**45**	45	39	**46**	43	38	**61**	60	56	**89**	84	82
Panel B: *Entry to Higher Education from Year 12*												
Rural	**42**	46	49	**39**	40	41	**52**	52	58	**42**	47	47
Second quartile	**39**	40	41	**51**	52	52	**45**	48	45	**45**	45	46
Third quartile	**57**	57	55	**49**	51	50	**50**	51	54	**46**	47	48
Urban	**55**	52	51	**52**	49	48	**56**	53	48	**59**	55	52
Panel C: *Higher Education Participation*												
Rural	**15**	17	19	**13**	14	15	**26**	28	32	**28**	34	36
Second quartile	**12**	13	16	**16**	18	19	**22**	25	26	**34**	35	36
Third quartile	**25**	24	23	**21**	21	23	**30**	29	28	**38**	37	38
Urban	**27**	26	22	**24**	21	17	**34**	31	27	**52**	47	43
Panel D: *TAFE (Non-Apprenticeship) Participation*												
Rural	**12**	12	12	**17**	19	18	**17**	18	17	**23**	21	22
Second quartile	**15**	15	15	**17**	17	17	**21**	20	20	**22**	22	22
Third quartile	**10**	11	11	**13**	14	14	**18**	18	19	**18**	19	18
Urban	**14**	13	13	**17**	15	15	**18**	17	18	**17**	18	18
Panel E: *Participation in Apprenticeships (inc. Traineeships)*												
Rural	**19**	20	19	**17**	18	17	**19**	21	20	**16**	15	14
Second quartile	**20**	19	19	**22**	21	20	**25**	24	24	**16**	15	15
Third quartile	**19**	19	19	**16**	17	17	**14**	15	15	**15**	16	16
Urban	**16**	15	17	**18**	17	19	**16**	14	15	**8**	11	11
Panel F: *Post-School Educational Participation*												
Rural	**46**	49	49	**50**	52	53	**63**	67	68	**62**	66	67
Second quartile	**45**	44	46	**58**	58	58	**66**	67	68	**66**	66	67
Third quartile	**52**	50	49	**54**	57	58	**61**	61	61	**67**	67	67
Urban	**54**	53	51	**61**	57	54	**69**	65	62	**73**	70	67
Panel G: *Sample Sizes*												
Rural		849			714			453			765	
Second quartile		900			744			454			816	
Third quartile		885			697			440			814	
Urban		798			713			429			818	

See *Notes to Tables*

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Long *et al.* (1999)) with others who are perhaps not quite as geographically disadvantaged. Even though we are using an omnibus measure, the results presented in this chapter show, on occasion, substantial differences in rates of educational participation among the population density quartiles.

Year 12

The National Strategy for Equity in Schooling (1995) noted that the participation and educational outcomes of geographically isolated students were generally significantly lower than those of the population as a whole. A study of regional differences in school completion rates, however, cautioned against treating the urban/rural dichotomy too simplistically (DEET, 1987). Results based on school administration regions for New South Wales and Victoria showed that there was substantial variation in school completion within urban and rural areas and that some rural areas had completion rates similar to those of some urban areas (Brumby, 1989: 11-12) -- which is to say that the highest rates of completion in rural areas were similar to the lowest rates of completion in urban areas.

Through the States, the Commonwealth has provided special assistance to students in rural and remote areas of Australia through its targeted funding for rural schools, capital funding for hostels for rural students, and income support for students who must live away from home to attend school or who study be correspondence. In 1991, for instance, under the long-standing Country Areas Program (CAP) about 5% of students were enrolled in schools that received funding under the program. These programs were preserved within the Country Areas General and Country Areas National components of the National Equity Program for Schools.

Panel A in Table 11 also shows that young people from rural areas have lower rates of school completion than young people from urban areas. This difference can be observed for each of the cohorts in this study. During the mid 1980s and into the early 1990s the Year 12 completion rates for students from both urban and rural backgrounds increased. Completion rates for rural students doubled from about one in three in the early 1980s to about two in three in the early to mid 1990s. The growth in Year 12 completion rates for the urban groups was only slightly less, nearly doubling from 45% at the start of the 1980s to 89% in 1994.

Hence there has been only a modest improvement in equity during the last decade and a half. At the start of the 1980s students from urban backgrounds were about 40% (45/32) more likely to complete secondary school and by the mid 1990s this had fallen to about 30% (89/67). The trend across this period, however, was not uniform. The relative rates of Year 12 completion of rural and urban students had converged towards the end of the 1980s -- urban students were only 20% (61/51) more likely to complete Year 12 for the 1970 cohort. Rural students, however, did not benefit as much as urban students from the surge in Year 12 completion rates in the early 1990s.

Rural students are also relatively worse off in the 1990s due to a change in the Year 12 completion rates within the distribution of rurality measures. For the first three cohorts

there was little difference between the rural category and the second quartile of population density measures -- if anything, the Year 12 rates for the rural category were marginally higher. By the 1990s, however, a substantial gap has developed between the rural category and this second quartile -- the Year 12 completion rates of rural students are now markedly lower than all other categories of the population density measure.

The differences between the rates of Year 12 completion for rural and urban students may reflect factors inherent in rural schools and schooling such as lengthy travel to school, fewer educational resources or smaller schools offering a restricted curriculum -- all possible consequences of low population densities and geographical isolation. On the other hand, however, the lower completion rates of Year 12 graduates may reflect other characteristics of the students and their families -- that the parents of rural students may have, on average, lower socio-economic status, lower levels of education, and perhaps, less ambition for their sons and daughters to leave home and attend university (and therefore complete Year 12).

The sets of adjusted rates in Panel A in Table 11 address these issues -- and they tell an interesting story. The differences between Year 12 completion rates of urban and rural students are marginally reduced when account is taken of differences in gender, socio-economic background, ethnicity and State of residence -- but they are still there. This is the case for all four cohorts. During the 1980s, however, further adjustment for school type, achievement and post-school expectations eliminate the urban-rural differences altogether. These results suggest that in the 1980s the different rates of school completion are attributable to school performance or the educational expectations of influential others. Expectations may themselves, of course, reflect the realities (or desirability) of further education and study in the city or a regional centre. Hence the absence of differences at the second level of adjustment should not be interpreted as indicating that factors inherently associated with rural residence and schooling play no part in the lower rates of Year 12 graduation of rural students.

The effect of the second level of adjustments for the 1975 cohort, however, is different -- the rural-urban differences do not disappear. This result suggests that the continuing increase in Year 12 completion rates at the end of the 1980s and into the 1990s has produced a level of Year 12 completion at which factors associated with rurality *per se* are explicitly observable and that rural secondary students have a lower chance of completing Year 12 because of their rural location (rather than as an artefact of other factors associated with rurality).

The adjusted rates show a trend that was also evident for the observed rates. In the early to mid 1990s the adjusted rates of Year 12 completion of rural students became different from all other categories. In the 1980s the school adjusted completion rates of rural students was similar to that of the second quartile or were between the rates of the second quartile and urban students. By 1994 the adjusted Year 12 graduation rates of the second quartile are closer to those of urban students. A gap has developed between the school completion rates of rural and other students.

Entry to Higher Education from Year 12

Students from rural areas are also less likely than other students to make the transition from Year 12 to higher education. The values in Panel B in Table 11 show that there was a gap of about 15 or so percentage points between the rural and urban categories in the early and mid 1980s. This difference had all but disappeared by the late 1980s, but these gains were reversed and by the mid 1990s the entry rate from Year 12 to higher education of rural students was little changed from a decade or more earlier.

There is, however, one sign of improvement compared with this earlier period. In the early and mid 1980s entry rates for students from rural areas were markedly lower than for the urban and at least one of the other categories. This was certainly not the case at the end of the 1980s where there was little consistent pattern in the differences among the four categories. In the mid 1990s, however, the entry rates for rural students were little different from any other category apart from that for urban students -- and hence were marginally closer to the national mean.

The adjusted rates show fairly consistently that where rural-urban differences do exist, some of the difference can be attributed to differences in other background characteristics. At the first level of adjustment, the values for the rural category typically increase -- and in the case of the most recent cohort, the increase of five percentage points is quite marked. The converse is also true -- the adjustment tends to reduce the values for the entry rates of urban students by three or four percentage points. In terms of entry to higher education, urban students are advantaged by such characteristics as their socio-economic and ethnic background. Year 12 students from rural Australia are correspondingly *dis*advantaged in terms of being less likely to have these characteristics.

Importantly, however, it is only for the 1970 cohort that the regional differences disappear after controlling for schooling and post-school expectations. The contribution of attending a rural school to lower entry rates, other background characteristics equal, was at least as high in the mid 1990s as it was in the early and mid 1980s, and possibly higher.

Taking into account the additional characteristics which constitute the second level of adjustment generally serves to further reduce the urban-rural differences, although only slightly. For the most recent cohort, even after taking into account this very broad array of characteristics, there is still a five percentage point difference in entry rates that can be attributed to attending a school in an urban or rural area.

The results for the 1970 cohort are something of an anomaly. Entry rates for rural students were particularly strong for that cohort. The reason for this is not clear. It might be attributed to the growth of regional universities (and regional campuses) and distance education during the late 1980s. Such growth was not simply demand-driven -- it was part of an explicit strategy to allocate funded-places for undergraduate students to better serve rural areas (CTEC, 1987: p. 97). If this is the explanation, then it is unclear why regional differences in higher education entry had returned by the mid 1990s.

Higher Education Participation

There is a substantial body of research indicating that rural youth have lower levels of participation in higher education than other young Australians (Lamb *et al.*, 1998; Long, 1992; Martin, 1994; NBEET, 1996). The disparity in access was recognised in the allocation of additional places in the 1985-87 triennium to regional universities and subsequently in policy and program documents written in the context of the creation of the Unified National System and requirements for institutional accountability (Dawkins, 1987 & 1988, DEET 1990). Students from rural and remote backgrounds have been identified as disadvantaged. Universities have introduced equity plans to improve access to higher education by students from rural and remote areas.

The results in Panel C bring together the regional differences in Year 12 completion and entry from Year 12 to higher education. Given the relative disadvantage of rural youth for these categories of education, it follows that rural youth will have substantially lower levels of participation in higher education than young people from urban areas -- and this is the case.

Urban youth were about 1.8 times more likely to participate in higher education than rural youth for all except the 1970 cohort, where the difference was about 1.3 times. In fact, rural youth barely participated in any of the substantial growth in higher education in the early 1990s -- 26% participated in higher education by age 19 in 1989 and 28% in 1994. In this same period overall participation increased by 10 percentage points and the participation of urban youth by 18 percentage points. Again, the apparent educational gains made by rural youth during the 1980s had been rolled back by the mid 1990s.

Given the sometimes inconsistent changes among the middle two categories, comparison of rural rates of participation with the national means (Table 1) can sometimes provide a clearer story. In 1980 and 1984 rural participation rates were about three-quarters of the national average, in 1989 rural participation rates were a little over 90% of the national average, and by 1994 had returned to about three-quarters of the national average. The story is similar and consistent with the trend in other time-series data for 1991-1997 (DETYA, 1999: 57).

The adjusted rates in Panel C show the expected pattern. Students from rural schools are disadvantaged in terms of educational participation by some of their socio-economic characteristics -- particularly their socio-economic and ethnic background. When these are removed, there is some convergence between the higher education participation rates of urban and rural youth. The differences disappear for the 1970 cohort, but remain for the other cohorts. Although at the first level of adjustment there is still a 13 percentage point difference between the urban and rural categories for the most recent cohorts, in relative terms this is somewhat smaller than for either of the first two cohorts. This result suggests a slight decline in the direct effect of rural location on higher education participation.

Adjustment for further background characteristics such as school achievement, type of school, self-concept and the expectations of parents, teachers and friends, generally has a similar effect -- rates for urban and rural youth converge and either disappear or are reversed. For the most recent cohort, however, there is a clear residual difference of 7 percentage points. This suggests that, all other (measured) characteristics equal, for the first time, an identifiably rural disadvantage emerged in the 1990s for participation in higher education by age 19.

TAFE

The barriers to the participation of rural people in vocational education and training are similar to the barriers to participation in other forms of education. Golding *et al.* (1997: 50-51) distil the following list from the literature: distance and location, information, preparedness, finance, support, childcare, work opportunities and accredited training. *Towards a Skilled Australia* (ANTA, 1994) identified people from rural and isolated areas as disadvantaged in terms of access to, and the delivery of, vocational education and training. The current strategy plan of the Australian National Training Authority (ANTA, 1998) identifies a need for the 'expansion of the range of programs undertaken by people in rural and remote communities, including programs that take advantage of computer technology.' (p. 16) This suggests that the principal issue is not so much one of overall levels of participation, but one of the variety of programs -- a very similar constraint to that faced by rural secondary schools.

As shown in Chapter 6, post-school education at a TAFE college is one of the most equitable forms of education in Australia -- participation by young people is relatively unaffected their socio-economic background. The results in Panel D confirm that this is also the case for regional location. Only the differences for the 1961 and 1975 cohorts are statistically significant -- and they are not large. These differences do, however, point tentatively to a trend across the cohorts to a relatively greater increase in participation among rural youth compared with urban youth. For the 1961 cohort, urban youth were marginally more likely to participate in TAFE than were rural youth, but for the 1975 cohort this is reversed. By the mid 1990s it appeared that rural youth were marginally more likely to participate in TAFE than were urban youth.

The greater access of rural youth to TAFE colleges than to higher education is no doubt because TAFE colleges have greater presence in regional Australia than do universities. In part this follows from the (usually) substantially smaller size of TAFE colleges -- they require a smaller population base to support them. TAFE colleges in some rural areas may also benefit from the absence of competition from universities and private providers. Lamb and his colleagues (1998) also found that the rates of TAFE participation for young people in rural and urban areas were roughly similar and concluded that VET programs were very important for young people living in rural parts of Australia (p. 28).

Statistical adjustment of the observed values in Panel D is not particularly informative. Since there is so little social or educational selection for entry to TAFE as a whole, adjustment for other social or educational differences will have little effect. The adjusted values in Panel D rarely differ from the observed values.

Apprenticeships

There are some differences among the categories of Panel E in Table 11, but they do not necessarily form consistent and interpretable trends. Given this, rather than focus on urban-rural comparisons, it will be more informative to compare the participation of rural youth in apprenticeships with the national averages (Table 1). The participation of rural students in apprenticeships has been within a percentage point of the national average throughout the 1980s and in the mid 1990s was two percentage points above the national average. Rural students retained their levels of participation in apprenticeships slightly better than average through the recent downturn in apprenticeship commencements. In short, there is little sign of rural youth being disadvantaged in terms of access to apprenticeships. Lamb *et al.* (1998: 28) also found that 'Rural-based males are more likely to take up apprenticeships than their urban-based peers'.

Once again, statistical adjustments are not particularly informative. There is usually some tendency for participation rates to converge as extraneous sources of variation are removed. The changes to the observed values, however, are usually slight.

Post-School Education

Post-school participation is (almost) the sum of participation in higher education, TAFE and apprenticeships. Given that there are quite small regional differences for TAFE and apprenticeships, and somewhat larger differences for higher education, any regional differences in post-school education will be driven by the differences in access to higher education.

Across the four cohorts, the percentage differences among the urban and rural categories have ranged between 6 and 11 percentage points in favour of the post-school participation of urban youth. The most recent cohort recorded the largest difference of 11 percentage points. This latter difference, however, was in the context of higher overall levels of post-school educational participation. The increased absolute difference is a return to the same relative levels of access for rural youth to post-school education that prevailed in the early 1980s.

A similar conclusion follows if rural rates are compared with the national means. Rural rates of post-school educational participation by age 19 were 3 percentage points lower than the national average in 1980, 6 percentage points lower in 1984, 2 percentage points lower in 1989, and 5 percentage points lower in 1994.

Interestingly, once the values are statistically adjusted for other background characteristics, there are no statistically significant differences attributable to rural-urban differences for all but the oldest cohort. At the second level of adjustment, only the 1965 cohort has statistically significant differences -- a result that implies that much of the urban-rural difference in participation in post-school education and training is associated with differences in schooling and post-school expectations.

Discussion

There are a number of reasons why young Australians growing up in rural and remote parts of Australia might be prompted to leave school earlier. The first is the difficulties imposed by distance and travel to school. It may simply be more of a burden to get to school in country areas. Second, distance may be associated with quite real travel or accommodation costs. Third, the opportunity costs of education may be higher in rural areas because of the possibility of work on the family farm or in a family business (Brumby, 1993: 52). Fourth, rural schools are likely to have fewer enrolments, a feature which may influence the availability of educational resources and the breadth of curriculum that can be provided, especially in senior secondary schooling (McKenzie *et al.*, 1996) -- although the possible benefits of smaller class sizes could have a countervailing effect. Fifth, any educational disadvantages may be amplified across generations if levels of parental education are also the result of processes of educational disadvantage. Finally, if access to tertiary education appears less likely or less affordable, then the incentive for completing school may be reduced for rural students and parents alike.

Whatever the reasons, our results show continuing differences in school completion rates between urban and rural students. Although there was some modest convergence in Year 12 completion rates during the 14 years covered by this study, there were also some disturbing signs. Relative improvement of school completion rates of rural students did not continue into the 1990s; for the first time in the 1990s the differences had an identifiably 'rural' character; and the rural category became more differentiated from all other categories in our measure of geographic location.

The lower higher education participation of teenagers from rural areas starts from this already lower rate of school completion. Rural youth face additional barriers to participation in higher education that do not exist for young people living in cities or urban areas that have a university. It is hardly surprising then that enrolment in a university remains less likely for young people from rural areas than for urban youth. What is surprising is that that with improvement in transport and communication these barriers do not seem to have been reduced.

The participation of rural youth in vocational education and training, however, is at least of a similar order to the participation of other young people. This may in part reflect the lower school completion rates in rural areas -- some participation is presumably a substitute for school completion and may be prompted by the more narrow curriculum sometimes offered by rural schools. Some too may be a substitute for participation in higher education. Nevertheless, vocational education and training provides a significant pathway to further education and training for rural youth.

Summary

- The Year 12 completion rates of rural students were below the national average. The improvement in the relative position of rural youth during the 1980s did not continue into the early 1990s.

  Differences in rural-urban rates of Year 12 completion were not simply the result of other characteristics of rural and urban families -- they reflect specifically rural and urban differences.

- Students from rural areas were less likely than other students to make the transition from Year 12 to higher education. The improvement of the entry rates of rural youth during the 1980s was reversed in the 1990s. The contribution of attending a rural school to lower entry rates, other background characteristics equal, was at least as high in the mid 1990s as it was in the early and mid 1980s.

- In the early and mid 1980s the higher education participation rates of rural youth were about three-quarters of the national average but by the late 1980s had risen to a little over 90% of the national average. By the mid 1990s participation rates had returned to the levels that prevailed in the early 1980s.

  Some of this apparent disadvantage can be attributed to other background characteristics of rural families. Once these effects were removed, there was some indication that the disadvantage in term of higher education participation that can be attributed directly to a rural location may have declined in the period 1980 to 1994.

- Post-school education at a TAFE college is one of the most equitable forms of education in Australia -- this was also the case for regional location. There were indications of a trend toward a relatively greater increase in participation among rural youth compared with urban youth.

- The participation of rural students in apprenticeships has been within a percentage point of the national average throughout the 1980s and in the mid 1990s was two percentage points above the national average -- there was little sign of rural youth being disadvantaged in terms of access to apprenticeships.

- The relative disadvantage of rural youth in terms of participation in post-school education and training was similar in the mid 1990s to the levels that prevailed in the early and mid 1980s. Gains made in the late 1980s had disappeared.

9. DIFFERENCES AMONG THE STATES

It might be expected that forms of post-compulsory education will display differences among the States (we use the term *State* to refer to both States and Territories) to the extent that States are responsible for the financing and provision of different forms of education. If this is the case, then we should observe the greatest differences for school education, somewhat smaller differences for TAFE and apprenticeships, and the least difference for higher education.

Demand for education, however, is not solely a product of the education and training policies of governments. Chapters 2 and 3 discussed other sources of demand for education and training. There are differences among the States in terms of employment by industry and occupation as well as in terms of overall levels of unemployment. There is, however, an important countervailing factor -- much of the entry to TAFE and higher education is dependent on patterns of school completion.

School education in Australia is the responsibility of the eight State governments -- although the Commonwealth provides funds through the States to government schools and on a needs-basis to non-government schools. Additionally the Commonwealth funds an extensive program of student assistance as well as providing funding for some equity programs in government schools. The States pay for and operate their own schools (in which about 70% of students are enrolled) as well as setting the broad parameters for non-government schools.

Administration and funding of the TAFE colleges and the training system is also a State responsibility. The influence of the Commonwealth in the vocational education and training sector has gradually increased over the period of this study. The Commonwealth used TAFE extensively to delivery its programs of labour market assistance throughout the 1980s and into the 1990s. Additionally it provided annual recurrent and capital grants to facilitate the expansion of TAFE. The Commonwealth took a more active role with the creation of the Australian National Training Authority Agreement between the Commonwealth and the States in 1994 -- only at the very end of the period covered by the study.

The higher education sector consists of independent, self-governing universities. The Commonwealth provides nearly 60% of operating revenue for the higher education sector (DEETYA, 1997) and provides the policy context within which the universities operate. By comparison, for much of the period covered by this study, State governments provided less than 5% of the operating revenue of universities. The balance consists in the main of reimbursements from the Higher Education Contributions Scheme and course fees.

Table 12 presents the results for the various forms of post-compulsory education for each of the States. Some of the sample sizes in Table 12 may appear to be too small to provide reliable estimates. Smaller States were over-represented in the initial sampling in order to provide more reliable estimates for those States. The sample sizes shown in Table 12

have been weighted in order to provide national estimates. The 29 weighted cases for the Northern Territory in the 1975 cohort, for instance, correspond to 136 actual students. There is a discussion of weighting procedures in the Appendix.

Year 12

The school systems of the States differ in terms of their certification and assessment systems, school organisation, age/grade profiles, mix of public and private schooling and post-school educational structure and opportunities. The States also differ in terms of their industrial base and hence also in terms of the occupations and educational qualifications of their populations and the robustness of their local labour markets. These differences are likely to produce differences in Year 12 completion and in levels of participation in immediate post-school education -- albeit in ways that are often difficult to predict.

Some structure may be given to the comparisons of State school completion rates by noting at the outset that the Australian Capital Territory (ACT) has relatively high completion rates, that Tasmania and the Northern Territory (NT) have relatively low completion rates, and that the five mainland States have completion rates somewhere in between.

All the States experienced growth in Year 12 completion rates between 1980 and 1994 -- but this growth was not distributed evenly among the States. The proportional increase was greatest for the Northern Territory which was starting from a lower base -- Year 12 completion rates increased more than six-fold. Year 12 completion rates increased by a factor of about two and a half in South Australia and Victoria, by about 2.3 in Queensland and Tasmania, and nearly doubled in NSW. Completion rates in the ACT, which had less scope for growth, increased by only 30 per cent.

Some of the differences in school completion rates between the States can be attributed to differences in population characteristics between the States. The population of the ACT in particular has a high socioeconomic profile and its very high Year 12 graduation rates are partly -- though not entirely -- attributable to this factor. After adjustment for these characteristics, the ACT school completion rate for the 1975 cohort, for instance, falls by six percentage points -- from 95 to 89 per cent. Similarly Victoria seems to have been relatively advantaged in terms of school completion by the characteristics of its population. After adjustment Victoria's graduation rates tend to decline by between two and four percentage points. Correspondingly, New South Wales and Tasmania seem to be relatively disadvantaged in terms of Year 12 completion rates by their population characteristics -- and after adjustment their school completion rates increase accordingly.

There are further, usually minor, changes after adjustment at the second level. Much of the adjustment -- at both the first and second level -- serves to reduce the differences in completion rates among the States. Nevertheless, often substantial differences remain. These differences reflect historical, cultural and organisational differences that exceed the limits of our data to explain.

Table 12 Year 12 Completion and Selected Forms of Educational Participation by Age 19, by State or Territory of Residence: 1980, 1984, 1989 and 1994

Cohort born in . . .	1961			1965			1970			1975		
At age 19 in . . .	1980			1984			1989			1994		
Level of adjustment . . .	0	1	2	0	1	2	0	1	2	0	1	2
	%	%	%	%	%	%	%	%	%	%	%	%
Panel A: *Year 12 Completion*												
Australian Capital Territory	**69**	64	59	**71**	60	56	**80**	74	70	**95**	89	85
New South Wales	**36**	37	35	**33**	34	36	**50**	55	55	**71**	74	73
Victoria	**33**	30	31	**37**	35	34	**55**	53	52	**82**	78	79
Queensland	**37**	39	39	**41**	43	41	**64**	62	59	**86**	86	86
South Australia	**36**	35	40	**42**	41	43	**61**	55	62	**90**	86	87
Western Australia	**35**	36	35	**39**	37	33	**58**	54	56	**74**	73	75
Tasmania	**26**	32	31	**26**	32	31	**38**	44	44	**60**	69	69
Northern Territory	**11**	14	29	**18**	20	26	**50**	43	45	**64**	65	66
Panel B: *Entry to Higher Education from Year 12*												
Australian Capital Territory	**44**	36	42	**42**	41	42	**47**	41	47	**49**	43	40
New South Wales	**48**	54	52	**49**	53	52	**57**	58	58	**49**	50	48
Victoria	**55**	53	50	**49**	52	49	**53**	52	53	**52**	51	51
Queensland	**47**	45	51	**51**	46	47	**45**	48	43	**44**	47	47
South Australia	**52**	43	47	**34**	29	37	**42**	42	48	**47**	43	49
Western Australia	**50**	43	42	**59**	54	54	**47**	44	43	**50**	47	49
Tasmania	**35**	42	46	**36**	38	38	**48**	46	49	**43**	49	47
Northern Territory	**41**	43	42	**50**	37	42	**47**	48	54	**50**	54	53
Panel C: *Higher Education Participation*												
Australian Capital Territory	**32**	24	21	**30**	21	17	**38**	30	29	**46**	37	33
New South Wales	**19**	22	20	**18**	20	21	**28**	32	32	**35**	38	37
Victoria	**21**	18	20	**18**	19	18	**30**	28	27	**42**	40	40
Queensland	**19**	20	21	**21**	21	19	**29**	29	25	**38**	39	38
South Australia	**23**	20	23	**15**	12	14	**26**	23	30	**43**	36	39
Western Australia	**19**	17	16	**23**	20	18	**27**	27	24	**37**	35	37
Tasmania	**11**	18	17	**9**	14	12	**19**	22	23	**27**	36	34
Northern Territory	**8**	13	20	**9**	10	15	**24**	19	25	**34**	38	40
Panel D: *TAFE (Non-Apprenticeship) Participation*												
Australian Capital Territory	**12**	14	14	**16**	15	15	**27**	26	26	**16**	20	21
New South Wales	**15**	14	14	**20**	19	18	**21**	20	20	**23**	23	24
Victoria	**11**	11	11	**17**	17	17	**17**	18	18	**17**	19	19
Queensland	**11**	11	11	**8**	9	10	**12**	13	14	**18**	16	16
South Australia	**13**	13	14	**13**	16	16	**20**	21	19	**21**	20	18
Western Australia	**12**	13	13	**16**	17	17	**20**	22	21	**25**	24	23
Tasmania	**13**	14	14	**17**	16	17	**18**	17	16	**14**	11	11
Northern Territory	**9**	10	10	**11**	13	12	**20**	21	18	**11**	10	10

Table 12 Year 12 Completion and Selected Forms of Educational Participation by Age 19, by State or Territory of Residence: 1980, 1984, 1989 and 1994 (Continued)

Cohort born in . . .	1961			1965			1970			1975		
At age 19 in . . .	1980			1984			1989			1994		
Level of adjustment . . .	0	1	2	0	1	2	0	1	2	0	1	2
	%	%	%	%	%	%	%	%	%	%	%	%
Panel E: *Participation in Apprenticeships (inc. Traineeships)*												
Australian Capital Territory	**10**	10	12	**11**	13	15	**9**	16	16	**12**	14	14
New South Wales	**18**	19	19	**25**	24	20	**18**	17	16	**16**	16	15
Victoria	**20**	20	20	**13**	15	16	**22**	24	25	**13**	15	15
Queensland	**20**	17	18	**17**	17	19	**17**	15	17	**15**	12	12
South Australia	**18**	16	16	**14**	14	17	**13**	13	11	**9**	7	8
Western Australia	**16**	16	17	**15**	15	19	**20**	19	19	**16**	15	14
Tasmania	**19**	16	17	**18**	15	18	**17**	14	14	**16**	14	13
Northern Territory	**9**	11	14	**17**	18	16	**30**	31	28	**19**	17	15
Panel F: *Post-School Educational Participation*												
Australian Capital Territory	**54**	49	49	**61**	51	49	**78**	75	73	**72**	68	66
New South Wales	**50**	53	50	**64**	63	61	**66**	67	67	**68**	71	71
Victoria	**49**	47	48	**51**	51	52	**68**	68	68	**69**	69	70
Queensland	**47**	46	47	**52**	53	54	**59**	59	57	**64**	62	61
South Australia	**50**	47	50	**49**	49	53	**59**	56	60	**66**	59	60
Western Australia	**51**	51	51	**59**	58	58	**65**	63	64	**71**	67	68
Tasmania	**41**	45	45	**47**	49	51	**56**	57	55	**53**	58	57
Northern Territory	**27**	32	43	**45**	47	48	**83**	79	80	**59**	61	61
Panel G: *Sample Sizes*												
Australian Capital Territory		46			41			30			64	
New South Wales		1177			981			591			1074	
Victoria		930			787			488			821	
Queensland		515			431			275			577	
South Australia		343			272			157			254	
Western Australia		293			243			162			303	
Tasmania		116			95			56			92	
Northern Territory		12			18			17			29	

See *Notes to Tables*

Entry to Higher Education from Year 12

It is difficult to detect consistent patterns over time in the rates of transition from Year 12 to higher education which are shown in Panel B. This is in part the result of the rather large standard errors associated with some estimates. Table A.1 shows that there are no statistically significant differences among the observed values for the 1961, 1970 and 1975 cohorts. Given this caveat, which extends to some of the sets of adjusted values, it would be unwise to comment on these values.

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Higher Education Participation

State differences in higher education participation are a little more structured than the entry rates. Participation rates in the ACT (in particular) and Victoria are usually somewhat higher than in other States while Tasmania and the Northern Territory are at the lower end of the distribution. Again, however, it would probably be unwise to attach too much precision to the results for the other States.

Statistical adjustment usually reduces the differences among the States for any particular cohort. In particular, the rather high participation rates for the ACT are substantially reduced (because of the high socio-economic background of students in the ACT). Indeed for three of the cohorts (the 1960, 1965 and 1975 cohorts) after removing the effects of family and personal characteristics, the differences between the States are not statistically significant. For the most recent cohort the adjusted rates of higher education participation for the eight States and Territories are remarkably similar.

TAFE

Young people in New South Wales consistently have among the highest rates of participation in TAFE courses in each of the four cohorts and the Northern Territory and Queensland among the lowest. The difference among the States are statistically significant only for the 1965 and the 1975 cohorts. For the most recent cohort the differences between the States with the highest levels of participation (New South Wales with 23% and Western Australia with 25%) and those with the lowest levels of participation (the Northern Territory with 11% and Tasmania with 14%) are statistically significant. Statistical adjustment does not reduce these differences.

Apprenticeships

Differences in rates of participation in apprenticeships are statistically significant only for the 1965 cohort. The only consistent results across the four cohorts are the relatively low level of apprenticeship participation for young people from the ACT and (possibly) South Australia. Statistical adjustment usually alters the rates only marginally and, for the most recent cohort, the resultant differences are not statistically significant.

Post-School Education

There are statistically significant differences among the rates of post-school participation for young people in the eight States and Territories. Young people in the ACT have a consistently high rate of participation across the 14 years covered by this study. Teenagers in Tasmania and the Northern Territory (except for the 1970 cohort) have among the lowest participation rates in post-school education and training.

The differences among the five mainland States are somewhat smaller, but nevertheless statistically significant for the 1965, 1970 and 1975 cohorts. Young people from New South Wales, Western Australia and Victoria have somewhat higher post-school educational participation rates than young people from Queensland and South Australia.

Statistical adjustment has the expected effect -- the rates for the outlier States and Territories with either high or low values move towards the national mean. For the five mainland States, however, there is often little change from the observed values.

10 PUBLIC AND PRIVATE SCHOOLS

In Australia just under one in three school students attends a non-government school (ABS, 1997). Enrolments in non-government schools are disproportionately higher in secondary schools, and higher again in upper secondary school. This results from a net movement from government schools at the end of primary school, and again at the end of Year 10, to the non-government sector as well as higher school retention rates. Our analysis of the relationship between the school sector and subsequent participation in forms of post-compulsory education is based on the type of school the student attended in the early years of their secondary schooling.

All schools -- government and non-government -- operate within parameters established by State education and assessment authorities. These impose limitations on the extent to which there can be differences between schools. There is, however, considerable variation among non-government schools in terms of their character and sponsoring agency. In this section we distinguish broadly between Catholic independent (non-Catholic, non-government) schools. Within the Catholic schools there are 'systemic' (the overwhelming majority of Catholic schools that recognise the various central Catholic education and diocesan authorities) and 'non-systemic' (usually higher-fee charging) schools.

Among the independent schools are schools run by community groups (Aboriginal groups among others), educational movements (the Steiner schools) and religious groups (the major Protestant churches, the Seventh Day Adventist Church, the Greek Orthodox Church, 'independent Christian', and Islamic and Jewish organisations). Enrolments in the independent schools are dominated in each State by several large long-established schools (usually aligned with a major Protestant Christian church and almost invariably located in metropolitan centres), although much of the recent growth in the sector has been through the expansion of newer schools.

The differences among government schools are limited by a common funding arrangement within each State and standard regulations governing staffing, training, accountability, and so on. The variation that can be observed among government schools is the result of several factors. First, larger schools are able to offer more diverse curricula, especially in the post-compulsory years. Second, the socio-economic and ethnic background of the students of a school is likely to reflect the area in which the school is located -- and cities and regions are often geographically stratified in terms of economic and ethnic criteria. Such differences can affect the ability of schools to raise funds from parents (although this is usually a small proportion of overall funding, it can affect the availability of additional resources), the talents and skills parents can contribute to the school, and the 'externalities' (or contextual effects) of the educational resources students bring to the school from their home. Third, principals and teachers can make a difference by their choice and implementation of curricula and learning programs. Fourth, in several States there are some government schools with entry based on academic criteria.

Year 12

We should expect the heterogeneity of schools to be reflected in differing Year 12 completion rates for individual schools -- and this is the case. The results presented in Table 13 show the mean Year 12 completion rates for the three categories of schools, but not the diversity that underlies those averages.

It is widely reported that independent schools have higher Year 12 completion rates than non-government schools. The issue is whether those higher Year 12 completion rates are the result of the type of student who attends such schools or something to do with the schools themselves. The differences in Year 12 completion rates associated with attendance at a non-government school are interesting for at least two reasons. First, there is the question of the generational transfer of inequality. One of the concerns in the debate about state-aid for non-government schools was that independent schools (in particular) may provide a means by which those who are economically advantaged can purchase better educational (and ultimately labour market) outcomes for their children and hence pass their own economic advantage to their children through the education system. For this to be a justified concern, it needs to be shown that attendance at an independent school does improve educational outcomes such as Year 12 completion rates.

Second, parents are likely to want to see some return for their payment of fees. Parents may choose to send their child to a private school because of the religious or moral instruction provided by the school, the educational philosophy of the school, the quality of the educational experience provided by the school, or simply because of the convenient location of the school. It is likely, however, that improved educational outcomes are a motivating factor for a number of parents -- and increased likelihood of completion of Year 12 is an outcome in which most parents have an interest.

The values in bold in Panel A of Table 13 are the Year 12 completion rates of students who attended government, Catholic and independent school for the four cohorts. These results show clearly the quite substantial differences between the three systems. Students who attended independent schools were substantially more likely to complete Year 12 than students who attended Catholic schools and students who attended Catholic schools were, in turn, more likely to complete Year 12 than students who attended government schools.

Throughout the 1980s and early 1990s the three school systems have all experienced growth in Year 12 completion rates. The rate of growth, however, has been greatest for the government schools -- possibly because the already high completion rates of independent schools offered less scope for improvement. At the start of the 1980s, the Year 12 completion rate for students in independent schools was nearly three times higher than for students from government schools. The difference was reduced slightly for the 1984 cohort to 2.7 times, to just over 1.8 times by the end of the 1980s, and then to under 1.3 times by 1994. The differences, then, have declined by about two-thirds.

Table 13 Year 12 Completion and Selected Forms of Educational Participation by Age 19, by School System: 1980, 1984, 1989 and 1994

Cohort born in . . .	1961			1965			1970			1975		
At age 19 in . . .	1980			1984			1989			1994		
Level of adjustment . . .	0	1	2	0	1	2	0	1	2	0	1	2
	%	%	%	%	%	%	%	%	%	%	%	%
Panel A: *Year 12 Completion*												
Government	**30**	31	33	**31**	33	34	**48**	50	52	**74**	77	77
Catholic	**44**	42	38	**45**	42	40	**61**	59	57	**83**	80	78
Independent	**88**	75	60	**84**	70	56	**88**	80	74	**96**	85	83
Panel B: *Entry to Higher Education from Year 12*												
Government	**45**	47	48	**45**	46	47	**43**	45	47	**40**	44	46
Catholic	**52**	52	52	**47**	49	49	**57**	55	52	**59**	55	52
Independent	**64**	58	55	**64**	57	52	**71**	65	62	**75**	62	57
Panel C: *Higher Education Participation*												
Government	**16**	17	18	**15**	16	17	**21**	23	25	**30**	34	36
Catholic	**25**	23	21	**22**	21	20	**35**	32	29	**49**	44	40
Independent	**57**	47	36	**55**	43	33	**62**	54	48	**72**	55	49
Panel D: *TAFE (Non-Apprenticeship) Participation*												
Government	**13**	13	13	**16**	16	16	**20**	19	19	**21**	20	20
Catholic	**13**	12	11	**18**	18	17	**17**	17	18	**19**	20	21
Independent	**13**	11	10	**17**	17	16	**12**	14	14	**14**	17	18
Panel E: *Participation in Apprenticeships (inc. Traineeships)*												
Government	**20**	20	19	**21**	21	20	**21**	20	19	**16**	15	14
Catholic	**16**	14	16	**11**	12	13	**15**	16	18	**13**	14	14
Independent	**6**	5	11	**5**	6	11	**10**	14	15	**4**	9	10
Panel F: *Post-School Educational Participation*												
Government	**47**	49	49	**54**	55	55	**60**	61	62	**62**	64	65
Catholic	**50**	46	46	**57**	56	56	**69**	67	67	**75**	72	70
Independent	**72**	60	54	**80**	70	64	**85**	82	78	**84**	77	73
Panel G: *Sample Sizes*												
Government	2863			2153			1212			2262		
Catholic	537			530			366			605		
Independent	212			184			197			348		

See *Notes to Tables*

An analogous change has occurred for students who attended Catholic schools -- their relative advantage in Year 12 completion compared with students who attended government schools has declined, but their relative *dis*advantage compared with students who attended independent schools has also declined. Overall, the last decade and a half -- from 1980 to 1994 -- has been a period of convergence of the Year 12 completion rates of the three school systems.

Even given this convergence, the observed differences in Year 12 completion rates for school system in 1994 were still relatively large compared with the effects of many other variables examined in this report. Three-quarters of students from government schools completed secondary school, marginally more from Catholic schools, and nearly every student who attended an independent school at age 10 or 14.

The difference in Year 12 graduation rates between government and independent schools is widely acknowledged. The question which follows from that observation is the source of the differences. It is clear that the socio-economic profile of students attending independent schools is markedly different from the profile of students attending government schools. Allowing for scholarships and so on, most families must meet at least two conditions in order to enrol their children at an independent school. First they must be able to pay school fees, which may be many thousands of dollars per year. Second, given that they are able to afford this expenditure, they must be willing to make it, that is, they must value attendance at an independent school quite highly. Both these conditions ensure that the family backgrounds of students in independent schools will, on average, be different from the family backgrounds of students at government schools. Similar considerations apply to attendance at Catholic schools, although the school fees are generally smaller and the reasons for attendance at such schools presumably somewhat different.

The first set of adjusted rates in Table 13 address the question of whether these differences in background are sufficient to explain the different levels of school completion of students in government and independent schools. If the differences in Year 12 completion rates can be attributed to differences in socio-economic or ethnic background, then there should be no difference after adjustment for these factors.

The values in Table 13 show that adjustment for these background differences has always served to reduce the apparent effect of school system on school completion quite substantially. For instance, for the 1961 cohort the observed difference between government and independent schools declines by 14 percentage points from 58 percentage points (88-30) to 44 percentage points (75-31). Throughout the 1980s the observed difference was sufficiently large to mean that even after adjustment a substantial difference remained between the Year 12 completion rates of the two school systems -- results which were prima facie evidence that the different school completion rates were not simply due to the different backgrounds of students. By 1994, however, the observed difference has declined substantially and after adjustment the difference between independent and government schools is a comparatively modest eight percentage points.

Over the course of the last 14 years, the position of government schools has also improved relative to Catholic schools after the first level of adjustment. During the 1980s the school completion rate of students at Catholic schools was about ten percentage points above that for government schools after the first level of adjustment. By the mid 1990s, however, the adjusted completion rates of Catholic schools were only three percentage points higher than for government schools.

Differences between school completion rates of school systems might reflect differences in the post-school expectations of parents, teachers and friends. Students who are expected to go on to post-school study are more likely to receive encouragement to complete Year 12 -- and parents who send their children to independent school are more likely to have those expectations. The second level of adjustment takes these differences into account.

The values in Table 13 show that throughout the 1980s the differences between the school completion rates of the three sectors were further reduced after adjustment for these additional characteristics -- but that differences still remained, particularly between the independent schools on the one hand and Catholic and government schools on the other. Again these results pointed to there being something about independent schools themselves which contributed to completion of Year 12 -- quite apart from the backgrounds of the students who entered those schools. By the mid 1990s, however, the remaining differences are small. These analyses suggest that for any given student, attendance at a government, Catholic or independent school will have only a slight effect on their relative chances of completion of Year 12.

Entry to High Education from Year 12

For each of the cohorts, Year 12 graduates from independent schools have a greater likelihood of entering higher education than Year 12 graduates from Catholic or government schools, and Year 12 graduates from Catholic schools have a greater likelihood of entering higher education than Year 12 graduates from government schools. During the period spanned by the four cohorts, the entry rates for government schools declined *absolutely* from 45% in the early 1980s to 40% in the mid 1990s. At the same time, entry rates to higher education for students from independent schools increased from 64% to 75%.

It follows then, that the entry rates of Year 12 graduates from government schools have declined in relative terms. In the early 1980s, Year 12 graduates from independent schools were 1.42 times more likely than Year 12 graduates from government schools to enter higher education. This ratio remained unchanged in the mid 1980s, but increased to 1.64 times in the late 1980s and then to 1.88 times by the mid 1990s. Apart from the anomolously low result for Catholic schools in the 1965 cohort (47%), entry rates for Catholic schools have remained relatively constant compared with those for independent schools -- and hence have increased compared with those for government schools.

Statistical adjustment tends to reduce the differences among the three school systems. This is hardly surprising given the socio-economic characteristics implicit in enrolment in independent schools. For most cohorts, the first level of adjustment about halves the percentage point difference between government and independent schools. Nevertheless, a statistically significant difference remains.

The second level of adjustment reduces the difference between the entry rates of Year 12 graduates from government and independent schools even further. In fact, the differences between government and independent schools are not statistically significant for the 1961 and 1965 cohorts. For the two more recent cohorts, however, the residual differences among categories are somewhat larger and statistically significant. This difference suggests that, all else equal, independent (and to a lesser extent, Catholic) schools have higher entry rates from Year 12 regardless of the background of the student, their level of achievement at school, or post-school expectations. The caveats mentioned above apply to this conclusion.

Higher Education Participation

Participation in higher education brings together the relative increase in Year 12 completion for the government school sector and the relative decline in entry from Year 12 to higher education for that sector. The results in Panel C make it clear that the increase in Year 12 completion is the stronger effect. Between the early to mid 1980s to the mid 1990s higher education participation for students from government schools nearly doubled, while participation for students from the independent school sector increased by less than a half. Put alternatively, in the early to mid 1980s students from independent schools participated in higher education at more than three and a half times the rate of students from government schools. By the mid 1990s the difference had fallen to less than two and a half times. The decline can be attributed to the substantial increase in Year 12 completion among students from government schools and an increase in places in higher education that almost matched that increase.

Catholic schools tend to occupy an intermediary position between government and independent schools in many of these figures. The question is, did the higher education participation rates of students from Catholic schools move closer to those of students from government schools or those of students from independent schools during this time? The answer is that (excepting the value for the 1965 cohort) the position of students from Catholic schools improved marginally compared to students from government schools and therefore converged towards the higher education participation rates of independent school students.

Although the 1980s and early 1990s has been a period of convergence in terms of the higher education participation rates of students from the three school sectors, substantial differences remained by the mid 1990s. For the most recent cohort, students who attended independent schools at the start of their secondary schooling were more than twice as likely to have participated in higher education by the age of 19 as students from

government schools. The corresponding participation rates of students who had attended Catholic schools were about mid-way between those of students from government and independent schools.

Some of this difference is attributable to differences in family background, especially socio-economic status. The adjusted values for the 1975 cohort in Panel C of Table 13 show this effect. After removing the effects of socio-economic status and other background differences, the higher education participation rate for students from independent schools fell from 72% to 55% -- a very substantial adjustment. The adjusted rate for students from Catholic schools also declined somewhat (from 49% to 44%) which indicates that they too were more likely to have family background characteristics associated with a greater likelihood of participation in higher education. Correspondingly, the first level of statistical adjustment led to a modest increase in the higher education participation rate for students from government schools (from 30% to 34%). All told, adjustment for differences in family background halves the percentage point differences among the higher education participation rates of students from the three school sectors. Nevertheless, statistically significant differences remain.

The second level of adjustment takes into account differences in school achievement, self-concept of ability and perceived expectations of parents, teachers and friends. The differences among the higher education participation rates of students from the three school sectors are further eroded. Once we have made *all else equal* between the school sectors (as far as we are able), students from independent schools are about a third more likely to participate in higher education by age 19 than students from government schools. This residual difference remains statistically significant.

TAFE

In the early to mid 1980s there was little difference in the extent to which students from government, Catholic and independent schools participated in TAFE courses (other than apprenticeships and traineeships). By the late 1980s and mid 1990s, however, the percentage of students from government schools who participated in TAFE had increased. There is now a clear tendency for students from government schools to participate in TAFE courses to a greater extent than students from independent schools. Once again, the participation rates for students from Catholic schools lie between those for students from the other two sectors, but somewhat closer to the participation rates for students from government schools.

For the most recent cohort, statistical adjustment for family and personal factors removes these differences. Adjustment for achievement and post-school expectations makes little additional difference. The apparent differences in participation in TAFE among students from the three school sectors can be attributed principally to their different family and personal backgrounds.

Apprenticeship

For the 14 years spanned by the cohorts which form the basis of this report, students from government schools have been more likely to undertake an apprenticeship. The values in Panel E in Table 13 show that, for the most recent cohort, students from government schools were four times more likely than students from independent schools to participate in an apprenticeship.

Some of this difference among the categories of school sector can be attributed to differences in the family and personal backgrounds of the students. For the most recent cohort, after statistical adjustment for family and personal background characteristics, the school sector differences in apprenticeship participation are not statistically significant.

Post-School Education

Students from independent schools have a higher likelihood of participation in post-school education than students from Catholic or government schools and students from Catholic schools have a higher likelihood of participation in post-school education than students from government schools.

There has, however, been some convergence between the post-school educational participation rates of students from government and independent schools. In the early and mid 1980s students from independent schools were about a half more likely than students from government schools to participate in post-school education by age 19. By the mid 1990s the difference had fallen to about a third. During this same period, the post-school education participation rates of students from Catholic schools uniformly converged towards those of students from independent schools and diverged from those of students in government schools. By the mid 1990s, the participation rates of the Catholic school sector were more clearly place mid-way between those of the other two sectors.

Values for the first level of statistical adjustment show that while some of the differences among the three sectors in post-school educational participation can be attributed to differences in the family and personal backgrounds of the students, these factors alone do not explain the differences in post-school educational participation for the most recent cohort. Nor indeed does the second level of statistical adjustment. Subject to the adequacy of our statistical controls, this result implies that there is something about attendance at an independent school (and to a lesser extent, at a Catholic school) that leads to higher levels of participation in post-school education and training by age 19.

Discussion

This section has discussed the already well-documented higher rates of school completion of students at non-government, and more especially, independent, schools. Our results show that the relative advantage associated with attendance at a non-government school

has declined substantially over the 14 years of this study, but that an advantage still persists.

The adjusted values show that throughout the 14 years of the study there were differences in school completion rates which could be attributed to characteristics of the type of school attended. By the mid 1990s, however, this had been reduced to only a modest residual difference. These results could be simply a reflection of the fact that our measurement of family background and other characteristics is imperfect (four categories of parental education, for instance, may not adequately capture the full range of parental education) -- and that the comparisons are not *all else equal.*

The results, however, are also consistent with the view that students gain some (now slight) advantage in likelihood of school completion by attending an independent school. If this is the case, it remains an open issue as to the source of this advantage. There are several possible sources of the apparently higher Year 12 completion rates in independent schools -- differences in access to educational resources, the creation of positive learning contexts among students of higher ability, management devolved to the level of the individual school, the linkage of secondary with primary education in essentially the same school, among others. We are not, however, in a position to test these alternatives.

Similarly, the apparent advantage of students from Catholic and independent schools in terms of entry to higher education may be located either in the nature of the schools -- academic programs which produce better than expected end-of-Year 12 results, or orientation towards higher education participation -- or in the self-selective nature of enrolment in the three school types, processes which have not been adequately captured by our set of statistical controls. In either case, it appears that the movement towards greater overall participation by young people in post-compulsory schooling and higher education has disproportionately benefited students from government schools.

Summary

This chapter compared the subsequent participation in post-compulsory education of young people who were enrolled in government, Catholic or independent schools in their early years of secondary schooling. The principal results were:

- Students from independent schools were more likely to complete Year 12 than students from Catholic schools, and students from Catholic schools were more likely to complete Year 12 than students from government schools.

  These differences declined substantially during the last decade an a half. Even so, the observed differences in Year 12 completion rates among the three types of school were still relatively large in 1994.

  Much of this difference, however, is due to differences in personal and family background and to levels of school achievement and post-school expectations. After removing these influences, however, there was still an identifiable effect of the type of

school attended in the early years of secondary school on the likelihood of completion of Year 12.

- Year 12 graduates from independent (and to a lesser extent, Catholic) schools have higher entry rates to university than Year 12 graduates from government schools.

  This difference has increased during the period covered by this study. The results suggest that, all else equal, students from independent (and to a lesser extent, Catholic) schools have higher entry rates regardless of other characteristics of the student.

- The 1980s and early to mid 1990s were a period of convergence of the higher education participation rates of students from the three school sectors, but substantial differences remained by the mid 1990s.

  For the 1975 cohort, about half of the difference in higher education participation rates between independent and government schools could be attributed to other family background characteristics and a further fifth to differences in achievement, self-concept of ability and post-school expectations.

- Students from government schools participated in TAFE courses to a greater extent than students from independent schools. The participation rates for students from Catholic schools lie between those for students from the other two sectors, but somewhat closer to the participation rates for students from government schools.

  The differences in participation rates were due principally to other family background characteristics associated with attendance at a given type of school.

- Students from government schools were substantially more likely to undertake apprenticeships or traineeships than students from non-government schools.

  This pattern appeared to be only partially associated with other background characteristics.

- Students from independent schools have a higher likelihood of participation in post-school education than students from Catholic or government schools and students from Catholic schools have a higher likelihood of participation in post-school education than students from government schools.

  The differences between the post-school educational participation rates of students from government and independent schools have declined since the early 1980s.

  These differences were not wholly due to other background characteristics.

11. SCHOOL ACHIEVEMENT

A unique feature of the *Youth in Transition* project is the availability of information about respondents' scores on multiple-choice reading, mathematics and other tests. For two of the samples -- the 1961 and 1975 cohorts -- the tests were administered by their schools when respondents were 14 years old. For the other two samples -- the 1965 and 1970 cohorts -- the tests were administered when respondents were 10 years old.

Our measures of school achievement are the result of summing respondents' standardised test scores and then dividing them into quartiles. The interest in this section is in the direction of the relationship between achievement and participation in the various forms of post-compulsory education and in the way in which participation rates have changed for the quartiles of achievement during the 14 years covered by the study.

There is the possibility that comparisons between the cohorts will be influenced by the different ages at which the tests were conducted. In making the comparisons we are assuming that the ordering of the students in terms of their achievement alters little between ages 10 and 14. Given the relatively high predictive power of these tests for educational and labour market outcomes regardless of the age at which they were conducted, this assumption seems tenable. There is the further possibility that the overall level of achievement of the cohorts may affect comparisons between the cohorts.

Year 12

The values in bold in Panel A of Table 14 show the observed Year 12 completion rates for students from each of the achievement quartiles for each of the four cohorts. The most obvious feature of this table is that -- as expected -- students with higher achievement scores are more likely to complete Year 12 for each of the cohorts. For the 1975 cohort, for instance, more than nine out of ten students (92 per cent) from the top quartile of achievement scores completed Year 12 while fewer than six out of ten (58 per cent) of students from the bottom achievement quartile completed Year 12.

As for many of the other characteristics in this report, school completion rates increase for each of the four categories across the 14 years spanned by the cohorts -- but the rate of growth is not the same for each category or constant across time. Growth in Year 12 completion rates has been least for the group of students in the highest quartile of achievers. This is doubtless a result of the ceiling effect -- with completion rates of about two-thirds at the start of the 1980s there was less scope for increase than for the other achievement categories. The completion rates of the third and second quartiles improved consistently from 1980 to 1994 compared with the top quartile.

The completion rates of the lowest 25 per cent of achievers compared with the other categories, however, was initially unchanged (and in some cases deteriorated marginally) during the initial expansion of Year 12 completion between 1984 and 1989. Apart from the early 1980s, it has only been in the 1990s that the growth in completion rates for this

group has been relatively higher than for other groups. The overall growth in Year 12 completion rates in the 1990s has been based principally on this group.

Even given the decline in differences between the highest and lowest quartiles, it is clear that measures of basic literacy and numeracy taken early in the school career (at age 10 for the 1965 and 1970 cohorts and at age 14 for the 1961 and 1975 cohorts) can predict completion of Year 12 to a large extent. This should not be surprising given that teaching of these skills is a fundamental task of the school system and that students who do not possess these skills probably find school less than congenial. It should not, however, be taken as implying that on-going schooling provides no improvement in these or other academic skills -- rather that there may be little *relative* change in the levels of these skills among students over subsequent years.

Equality of opportunity is an important concept in Australia. It is widely accepted that educational participation and outcomes should be based on merit, where the idea of merit contains some sense of cognitive abilities -- either in terms of basic skills or in relation to specific curricula. The achievement measures bear some (not necessarily perfect) relation to these concepts -- either directly (as measures of basic skills) or indirectly as likely strong correlates of performance across a range of curricula.

The view that family background strongly influences educational participation or outcomes stands in opposition to these ideas. The accident of birth into a poor or wealthy family should have little effect on educational participation or outcomes if there is equality of opportunity. The adjusted rates allow us to examine the relative impact of family background and achievement scores.

It is possible that the results of students for our achievement tests reflect little more than their social background. If this were the case, then when completion rates for the various achievement quartiles were adjusted for family background we would expect to see the differences between the completion rates disappear -- there would be no effect of school achievement per se. The values for the first level of adjustment in Panel A suggest that this in not so. Adjustment for family background has little effect on school completion rates for the four achievement quartiles. Across the four cohorts, Year 12 graduation rates decline by about two percentage points for the highest quartile after adjustment, increase by two or three percentage points for the lowest quartile, and are more often than not unchanged for the middle two quartiles. The fact that very substantial differences in completion rates remain after adjustment for family background and that the effect of adjustment for family background is relatively minor points strongly to the relative importance of school achievement in affecting the likelihood of Year 12 completion.

The changes due to the second level of adjustment -- other school experiences and post-school expectations -- are substantially stronger. Differences between the highest and lowest quartile are reduced by between 26 and 13 percentage points. The major component of this effect is attributable to self-concept of school ability -- not surprisingly, self-concept is closely related to achievement scores.

Table 14 Year 12 Completion and Selected Forms of Educational Participation by Age 19, by School Achievement: 1980, 1984, 1989 and 1994

Cohort born in . . .	1961			1965			1970			1975		
At age 19 in . . .	1980			1984			1989			1994		
Level of adjustment . . .	0	1	2	0	1	2	0	1	2	0	1	2
	%	%	%	%	%	%	%	%	%	%	%	%
Panel A: *Year 12 Completion*												
Highest 25%	**67**	65	51	**61**	57	44	**83**	80	74	**92**	90	94
Third quartile	**37**	37	38	**36**	36	34	**57**	57	56	**83**	82	81
Second quartile	**22**	23	28	**31**	32	36	**51**	51	54	**71**	72	74
Lowest 25%	**10**	12	21	**16**	19	32	**22**	25	31	**58**	60	69
Panel B: *Entry to Higher Education from Year 12*												
Highest 25%	**62**	60	52	**66**	64	56	**64**	65	59	**74**	72	62
Third quartile	**45**	47	51	**46**	47	48	**53**	52	51	**48**	48	49
Second quartile	**29**	31	42	**26**	29	37	**33**	33	41	**29**	31	37
Lowest 25%	**25**	25	42	**16**	20	37	**22**	22	40	**10**	14	28
Panel C: *Higher Education Participation*												
Highest 25%	**43**	39	28	**41**	37	27	**53**	52	44	**69**	65	53
Third quartile	**19**	19	19	**18**	18	17	**30**	30	29	**38**	39	38
Second quartile	**9**	11	16	**9**	11	14	**17**	17	21	**21**	23	28
Lowest 25%	**5**	8	16	**3**	6	15	**5**	7	14	**6**	11	24
Panel D: *TAFE (Non-Apprenticeship) Participation*												
Highest 25%	**13**	12	14	**12**	13	13	**13**	13	16	**12**	12	15
Third quartile	**14**	14	13	**16**	16	16	**17**	17	18	**22**	22	21
Second quartile	**11**	11	11	**16**	16	15	**20**	20	19	**22**	22	21
Lowest 25%	**12**	13	13	**21**	20	20	**26**	25	23	**27**	28	27
Panel E: *Participation in Apprenticeships (inc. Traineeships)*												
Highest 25%	**14**	13	17	**11**	11	15	**9**	11	15	**9**	9	12
Third quartile	**21**	21	20	**17**	19	19	**18**	19	19	**15**	15	15
Second quartile	**21**	21	18	**22**	23	21	**24**	24	22	**18**	18	16
Lowest 25%	**18**	19	18	**23**	21	19	**25**	22	19	**17**	17	13
Panel F: *Post-School Educational Participation*												
Highest 25%	**67**	63	56	**68**	65	59	**78**	79	79	**84**	80	74
Third quartile	**52**	51	50	**56**	57	55	**65**	66	65	**70**	69	69
Second quartile	**39**	41	44	**48**	50	52	**59**	59	60	**56**	58	60
Lowest 25%	**34**	38	45	**49**	50	57	**52**	51	53	**49**	53	60
Panel G: *Sample Sizes*												
Highest 25%		886			767			491			988	
Third quartile		955			730			503			900	
Second quartile		848			658			412			736	
Lowest 25%		735			661			366			590	

See *Notes to Tables*

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Entry to Higher Education from Year 12

The relationship between school achievement and entry to higher education from Year 12 had become substantially stronger in the mid 1990s. Throughout the 1980s, about two-thirds of Year 12 graduates from the highest achievement quartile entered higher education by the age of 19. This rate of transition held for the 1970 cohort despite a substantial increase in the percentage of this quartile who completed Year 12. In the mid 1990s, however, nearly three-quarters of the highest achievement quartile who had completed Year 12 entered higher education despite a further increase in the percentage of that quartile completed Year 12. At the other end of the achievement spectrum, however, the percentage of Year 12 graduates who enter higher education from the lowest achievement quartile has declined substantially.

The relative rates of entry to higher education tell the story. In the early 1980s, Year 12 graduates from the highest achievement quartile were 2.5 times as likely to enter higher education as Year 12 graduates from the lowest quartile, 4.1 times as likely in the mid 1980s, 2.9 times as likely in the late 1980s, and 7.4 times as likely in the mid 1990s. The difference has increased substantially.

A similar pattern emerges for the other two achievement quartiles compared with the highest achievement quartile. In the mid 1990s, the rate of entry to higher education of Year 12 graduates from the highest achievement quartile was, relative to any of the other three quartiles, higher than for any of the other three cohorts. And this is repeated for each of the other quartiles in turn. Rates of entry for the third quartile are higher in the mid 1990s than at any other time relative to the two lower quartiles, and similarly for the second quartile compared with the lowest. While completion of Year 12 has become less dependent on early school achievement, entry to higher education from Year 12 has become substantially more selective in terms of school achievement.

The statistically adjusted values show the effect of other background characteristics on the transition of Year 12 graduates to higher education. The characteristics that comprise the first level of adjustment have a modest effect -- usually reducing the impact of school achievement by a few percentage points. The modest impact of these characteristics is in part the result of the prior selection that has occurred in completion of Year 12.

The largest differences between the highest and lowest quartiles were for the 1965 and 1975 cohorts for which the difference was reduced by six percentage points. The absence of *any* effect for the 1970 cohort might point to the success of equity policies *within the higher education sector* towards the end of the 1980s -- such social differences as did exist were being channelled entirely through school achievement. It might be viewed as a matter of concern that in the most recent cohort characteristics seemingly extraneous to educational performance should directly influence entry to higher education, especially when such effects were not apparent at the end of the 1980s.

The second level of adjustment should be expected to effect substantially the extent of relationship between school achievement and entry from Year 12 to higher education. The variables that comprise the second level of adjustment include the respondent's self-

concept of their own ability (which has fairly strong relationships with both achievement and educational outcomes) and parents', friends' and teachers' perceived expectations of the respondent's post-school destination. Not surprisingly, adjustment for these variables substantially reduces (but does not remove) the impact of achievement on entry to higher education.

Over the course of the 14 years spanned by the cohorts in this study, the residual impact of achievement, after controlling for all other measured characteristics, has increased substantially. The difference between the highest and lowest quartiles was 10 percentage points in the early 1980s, 19 percentage points in the mid and late 1980s, and 34 percentage points in the mid 1990s. This increase results from the overall increase in the observed relationship rather than any reduction in the influence of any of the control variables.

Higher Education Participation

Higher levels of school achievement are important for both completion of Year 12 and entry to higher education from Year 12. The cumulative effect of these two steps towards participation in higher education should be stronger than the effect of either of the steps separately -- and the entries in Panel C show that this is the case.

The discussion earlier in this chapter suggested that the effect of school achievement on completion of Year 12 had declined from the early 19980s to the mid 1990s, but that there was a countervailing tendency for the effect on entry to higher education to strengthen. Any change in the overall effect of school achievement on higher education depends on which of these effects is stronger.

If only the difference between the highest and lowest quartiles is considered, these two changes tend to balance -- the ratio of the higher education participation rates of the highest and lowest quartiles of school achievement has shown no consistent trend across the cohorts -- it was 8.6 in the early 1980s, 13.7 in the mid 1980s, 10.6 in the late 1980s and 11.5 in the mid 1990s. There are, however, some changes in the relative higher education participation rates of the middle two quartiles. The values for these two achievement quartiles have shown a consistent increase across the four cohorts relative to the participation rates of both the highest and lowest quartiles.

The adjusted higher education participation rates in Panel C show the reasonably strong effects of personal background characteristics for all cohorts other than the 1970 cohort. Percentage differences between the highest and lowest achievement quartiles are reduced by 7 percentage points for the 1961 and 1965 cohorts and by 9 percentage points for the 1975 cohort -- the result of selection processes in both the completion of Year 12 and entry from Year 12 to higher education. Again, the results in Panel C show the strengthening in the mid 1990s of the effect of social characteristics on participation in higher education after the improvements of the late 1980s.

The importance of the context of family, teachers and friends together with type of school and self-concept of ability for participation in higher education is evident in the second

set of adjusted values in Panel C. The effect of school achievement on participation in higher education is often halved once these characteristics are considered. Hence much of the effect of school achievement on participation in higher education is transmitted through these characteristics.

TAFE

Programs taught in TAFE colleges (other than apprenticeships and traineeships) have progressively tended to attract students from the lower-end of the achievement spectrum over the course of the 14 years covered by the cohorts in this study. In the early 1980s participation in TAFE by the four quartiles was fairly equal, by the mid 1980s participation from the lowest achievement quartile was markedly higher than for the highest achievement quartile, and this difference increased for the two more recent cohorts.

The relative shift in the TAFE participation rates of the highest and lowest school achievement quartiles does not address the changes in the absolute participation rates. The participation rate of respondents from the highest quartile has been more or less constant across the four cohorts during a period in which participation in higher education (particularly from the highest quartile) has increased substantially. In terms appropriate to the modern era of training markets, TAFE has maintained its market share of this client category.

The increase in participation in TAFE has been among members of the other achievement quartiles, particularly among members of the lowest quartile. The members of this group were previously those least likely to participate in post-school education and training. The expansion of TAFE has served to increase the opportunities for this group.

As for most of the results for TAFE, the first level of adjustment produces results that are little difference from the observed results -- there is little if any impact of socio-demographic background characteristics on the relationship between achievement and participation in TAFE. The second level of adjustment does start to effect the relationship a little more, and particularly for the 1965 and 1970 cohorts, after adjustment the relationship is no longer significant. For the most recent cohort, there is an inverse relationship between school achievement and participation in TAFE regardless of other characteristics. The school achievement profile of entrants to non-apprenticeship TAFE courses has moved downwards in the period 1980 to 1994.

Apprenticeships

There has been some concern about the educational backgrounds of persons entering apprenticeships. Sweet (1991), for instance, claims that the educational background of apprentices had been declining during the 1980s -- despite the tendency for apprenticeships to be undertaken by persons who had complete Year 12. The values in Panel E lend some support to this suggestion. The participation rate in apprenticeships of members of the highest quartile of school achievement declined during the 1980s relative to the participation rates of the other quartiles. Similarly over the same period the

proportion of young people from the lowest achievement quartile who participated in an apprenticeships increased markedly compared with the other three quartiles.

For the most recent cohort, however, this trend is reversed. The decline in overall participation in apprenticeships has had least impact on those taking indentures among the highest achievement quartile. Compared with the late 1980s, there was no decline for this quartile. Participation in apprenticeships from the lowest two achievement quartiles, however, contracted markedly. The net result is relative rates of participation somewhat closer to those in the early and mid 1980s.

This should not be wholly unexpected. As the number of available apprenticeships declined, competition among candidates increases. If the selection process is in some way influenced by literacy and numeracy skills acquired in school, then those with lower skills should be less likely to obtain apprenticeships -- and this is what appears to have happened. It is an open question as to whether this apparent improvement in the school achievement profile of apprenticeship participation would be maintained if there is a return of overall participation in apprenticeships to the levels that prevailed in the 1980s.

Statistical adjustment for the family background of respondents makes little difference to the estimates of participation. Adjustment for other characteristics of school experience and post-school expectations, however, usually goes some way to removing (and for most cohorts eliminating) any relationship between achievement and participation in an apprenticeship. School achievement, then, has little effect on participation in an apprenticeship once the effect of a number of other characteristics is removed.

Post-School Education

The relationship between school achievement and the components of post-school education have changed in different directions for the period 1980 to 1994. In higher education, school achievement has become substantially more important for access from Year 12. Participation in TAFE, however, has gradually increased for those from the lowest achievement quartile while a similar trend for apprenticeships was reversed in the most recent cohort. The results in Panel F reflect these mixed currents.

Students with higher levels of achievement in school are more likely to undertake further study and training after school. This is true for all four cohorts. The size of this effect, however, has varied during the 14 years covered by this study. From the early 1980s the differences among the four achievement quartiles in terms of the likelihood of participation in post-school education declined substantially in the mid 1980s but then increased again in the late 1980s and mid 1990s, but has not returned to the levels of the early 1980s.

The first level of statistical adjustment tends to reduce the differences in post-school participation rates among the four categories of school achievement. The 1970 cohort is an exception, as it was for entry to, and to a lesser extent for participation in, higher education. Given the absence of any substantial effect of statistical adjustment for the

other forms of post-school education, the effect for post-school education is being driven by the pattern of socially structured participation in higher education.

The second level of adjustment, while not removing the statistical significance of differences, reduces those differences and sometimes disrupts the uniformity of the relationship between school achievement and the likelihood of participation in post-school education. This pattern suggests that particularly among the lower school achievement quartiles, the effects of achievement on subsequent participation in post-school education and training are related to the expectations of parents, teachers and friends for post-school study and work. Such expectations, of course, are likely in turn to have been conditioned by perceptions of the respondent's school performance in any case.

Discussion

The lesson to be drawn from these results is the importance of literacy and numeracy in the early years of schooling for later educational and labour market outcomes (see also Williams *et al.*, (1993b), Marks (1998), Commonwealth of Australia (1993)). Early literacy has long been recognised as an important contributor to later educational outcomes and State governments have implemented on-going literacy and early intervention programs -- after all, this is the core business of school education. Despite the focus of many school equity programs on literacy, it is only recently that it has moved to centre stage in terms of Commonwealth schools funding and programs.

While early literacy and literacy intervention programs are not a panacea, they are certainly addressing an outcome which is in itself an educational fundamental and an outcome crucial to equity. The net effect of such programs, however, is interesting to contemplate. If the effect is simply to move the entire distribution of literacy outcomes uniformly upwards (a good in itself), then those with poor literacy outcomes will still be in the same relative position -- at the bottom-end of the distribution.

It is possible that more students will move beyond some threshold of competency which allows them to more fully participate in society -- which would be a benefit to them as well as to the community as a whole. It is more likely, however, that instead of one such threshold there are a series of thresholds each offering greater opportunities for participation in further education and the labour market. Without corresponding shifts in the demand for (literacy) skills, there may be no net improvement in labour market outcomes.

The effect of literacy programs is more likely to be stronger at the bottom end of the distribution of literacy skills -- there will be a raising of the floor. The effect of this on outcomes would be positive for those whose skills are raised, but might be negative for those with whom they are now competing (and leave the outcomes for the upper end of the distribution unchanged). Such a scenario follows if outcomes are viewed as fixed. If the distribution of occupations continues towards requiring greater levels of literacy, or individuals become more productive in currently existing jobs because of their greater literacy skills (or contingently acquired skills), or employment levels increase, then the

labour market outcomes could improve for both those whose literacy has improved beyond what it would otherwise have been, and for those with whom they are competing for employment.

Summary

This chapter examined the school completion and post-school educational participation of students from four quartiles of school achievement. School achievement was measured by standardised multiple-choice tests in reading and mathematics. It was found that:

- Higher levels of school achievement are strongly related to completion of Year 12.

  The Year 12 completion rates of the third and second quartiles improved consistently from 1980 to 1994 compared with the top quartile. Growth for the lowest achievement quartile was concentrated in the 1990s.

  The effects of school achievement are largely, but not totally, independent of family background.

- The relationship between school achievement and entry to higher education from Year 12 became much stronger in the 1990s.

  For the most recent cohort, characteristics seemingly extraneous to educational performance became more important for entry to higher education from Year 12.

  Nevertheless, in the period 1980 to 1994 the impact of school achievement on entry to higher education has increased substantially.

- The higher education participation rates of the middle two achievement quartiles have shown a consistent increase across the four cohorts relative to the participation rates of both the highest and lowest quartiles.

  For the most recent cohort, about one seventh of the effect of school achievement on participation in higher education was the result of differences in family background. This was substantially more than for the 1970 cohort, but less than for the 1961 and 1965 cohorts.

- Programs taught in TAFE colleges (other than apprenticeships and traineeships) have progressively tended to attract students from the lower-end of the achievement spectrum over the course of the 14 years covered by the cohorts in this study.

  There is little if any effect of family background on the relationship between school achievement and participation in TAFE.

- The achievement profile of apprentices declined through much of the 1980s, but this trend reversed for the most recent cohort and the relative rates of participation for the school achievement quartiles returned to those that prevailed in the early and mid 1980s.

- Students with higher levels of achievement in school are more likely to undertake further study and training after school.

Appendix: Data and Analyses

This Appendix addresses some technical issues that lie behind the values presented in Tables 5 to 13 of this report. These tables provide estimates of participation in post-compulsory education for variously defined sub-groups from four cohorts of young people who were involved in the *Youth in Transition* project.

The Samples

The data for these analyses were obtained from four national probability samples of persons born in 1961, 1965, 1970 and 1975. Annual surveys of these samples, beginning in 1978, 1981, 1985 and 1990 respectively, have yielded information covering ages 17 to 33 years for the 1961 cohort, 16 to 30 years for the sample born in 1965, 15 to 25 years for those born in 1970, and 15 to 23 years for those born in 1975. These data, along with standardised tests and information collected in 1975, 1975, 1980 and 1989 respectively, provide the factual basis for the analyses and observations detailed in this report. The three samples are identified by reference to their birth year.

Measurement

All variables other than school achievement, rurality and, for the 1961 and 1975 cohorts, school system and State of residence, were measured as responses to questions in self-enumerated questionnaires. School achievement was measured by standardised achievement tests in reading and mathematics administered in schools. Rurality was derived from census data on the population density of the Local Government Area (LGA) in which the respondent's school was located when the respondent was tested. School system and State of residence for the 1961 sample were taken from the sample design.

Parental Occupations. Sample members were asked to report the occupations of their father or guardian and mother or guardian, and to describe their work. The responses were assigned occupational prestige scores based on the ANU-2 scale (Broom *et al.*, 1977). For the present analyses six categories -- a condensation of the full scale -- were used: professional, managerial, white-collar, skilled, semi-skilled and unskilled.

To simplify the presentation and to make the best use of the available information, a composite variable, 'parental occupation', was constructed. Since between 30% and 40% of respondents in any given cohort indicated that the occupation of the female parent was 'home duties', an occupation for which there is no occupational prestige score, and because child-bearing and child-rearing limit the participation of females in the workforce, the occupation of the male parent was taken as the base-line measure for the family unit. Where information was missing on the male parent the occupation of the female parent was substituted.

Parent's Education. This variable was measured through the respondent's report of the highest level of education completed by each parent. The measure itself allowed for responses on a four-point scale ranging from 'primary only' to 'post-secondary'. Parental

education is based on a combination of father's and mother's education in a manner similar to that used for parental occupation. In this case, however, mother's education was taken as the base measure which, if missing, was replaced by father's education.

Family Wealth. Since self-reports of family income and assets are unreliable and difficult to obtain, especially in mail surveys, an indirect measure of family wealth was devised based on housing characteristics and household possessions of the respondent's family during the early years of secondary school. The measure used is a factor score based on respondents' reports of the number of bedrooms and bathrooms in the family home, together with possession of telephones and dishwashers. These items were selected from a number of similar items as providing the best statistical representation of family wealth. For the present analyses the scores are grouped into three categories, the upper and lower quartiles (the rich and the poor respectively) and the middle 50 per cent (the second and third quartiles). There is surprisingly little change to this categorisation if such characteristics as possession of a holiday home or a boat are added to the list of variables in the scale.

Ethnicity. A respondent was defined as *Australian-born* if their father had been born in Australia, *English-born* if their father had been born outside Australia in a predominantly English-speaking country, and as *non-English-born* if their father had been born outside Australia in a predominantly non-English-speaking country.

Gender. The measure of gender derives from self-reports in answer to the question 'Are you a boy or a girl?'.

Rurality. Rurality is based on population densities derived from census data on the LGA in which the respondent's school was located at the time of sample selection. The Brisbane LGA is the sole exception. Because of its size this LGA is not equivalent to the others examined, so a smaller unit roughly equivalent in size to standard LGAs was used. The 25 per cent of respondents who had attended schools in LGAs with the lowest population densities were considered *rural* while the 25 per cent of respondents who had attended schools in LGAs with the highest population densities were considered *urban*. The remaining 50 per cent of respondents were categorised as the second and third quartiles.

State/Territory. This measure refers to the State or Territory in which the respondent's school was located at the time the sample was selected. This measure was used as a statistical control in the analyses.

Year Level or Grade. The measure refers to the respondent's year-level at age 14 (1961 sample) or age 10 (1965 and 1970 samples). Since the samples are age samples the persons involved are spread across at least three year-levels of schooling by regulations governing age of entry to school; Years 8, 9 and 10 for the 1961 sample, and Years 4, 5 and 6 for the 1965 and 1970 samples. The measure was used as a statistical control in the analyses.

School System. The measure refers to school system attended at age 14. Three categories are used -- government schools, Catholic non-government schools, and non-Catholic non-government schools -- identified respectively as government, Catholic and independent. For the 1961 cohort this measure was obtained as part of the sampling design. In the case of the 1965 and 1970 cohorts, respondents were asked to report on the school system attended in their first year of secondary school.

School Achievement. School achievement is a composite score based on a combination of results for the reading and mathematics tests administered in 1975 to the 1961 sample (age 14) and 1965 sample (age 10), and administered in 1980 to the 1970 sample (age 10). Thus, 'school achievement' refers to achievement at age 14 for the 1961 sample, and achievement at age 10 for the 1965 and 1970 samples. Three categories of achievement score are used: those scores corresponding to the top 25 per cent of achievement scores; those corresponding to the next 25 per cent of scores; and scores corresponding to the remaining 50 per cent of results.

Post-school Expectations. Three variables tap the perceived expectations for a student They were derived from respondents' reports of whether their parents wanted them to continue study after leaving secondary school, whether their teachers expected them to continue study after leaving secondary school and whether their friends intended to continue study after leaving secondary school.

Self-concept of Ability. Self-concept of ability was measured by responses to the question: 'How good were you at schoolwork compared to other students in your class in your last year of secondary school?'. Responses were grouped into three categories: average or below, a little above average, or a lot above average. These measures were used as a statistical controls in the analyses.

Percentages

The estimates are consistently presented as *percentages* because percentages are relatively straightforward to interpret (compared to, for instance, regression coefficients, logits or probits). There are three types of estimates: the observed percentages, the percentages *adjusted* for family and personal background characteristics, and the percentages *adjusted* for family and personal characteristics as well as educational experiences and post-school intentions.

The adjusted values were calculated using multiple classification analysis (Andrews *et al.*, 1973). This is a fairly simple approach based on ordinary least squares (OLS) regression. The use of OLS regression for the analysis of categorical variables (such as completed/did not complete, participated/did not participate) is contentious. Standard undergraduate statistical texts note the flaws of OLS -- that it can produce predicted values outside accepted ranges -- for our data, completion and participation rates greater than 100% or less than zero -- and that the standard errors for estimates are biased (Theil, 1971).

The problems with OLS are usually presented as an introduction to the use of logistic and probit regression which do not have these difficulties and are hence recommended. Unfortunately these forms of regression are not very useful for our purposes. It is not widely recognised that comparison of logits and probits over time (or between systems) is meaningless for the interpretation of changes in equity. Percentages capture the meaning of equity and changes in equity. We discussed this briefly in Chapter 4.

There are simple techniques for the transformation of logits and probits into percentages. Such transformations, however, require the arbitrary choice of an omitted category. Unfortunately, the estimates that result are highly contingent on the choice of the omitted category. This is not the same as OLS under which, although the estimates may change with different choices of omitted categories, the various outcomes are linear transforms of each other and the *sense* of the relative size of effects is preserved. Under the non-linear transformation from logits or probits to percentages, estimates corresponding to quite different interpretations can result dependent on the choice of omitted category (or base). Again this is not widely understood.

There are mitigating arguments that suggest that the problems with OLS are not as severe as is sometimes suggested. For instance, it has been known from the earliest work on logistic and probit regression that the problems with estimates of standard errors are not very great where the percentages are between 10% and 90%. For instance, Cox (1970: 28) notes that 'An analysis in terms of any of the four relations is likely to give virtually equivalent results' where the four relations are logistic, probit, angular and OLS. Probit and logistic regression only come into their own in areas such as epidemiological research where the percentages of interest are (in the context of most social research) extremely small and, in that context, have a more direct interpretation.

Weighting & Sample Attrition

The initial national samples were stratified by State and school sector within State. States with smaller populations were proportionately over-sampled to provide improved State estimates. Within strata, the initial samples were selected in two stages. First, schools were selected with probability proportional to size, and second, within schools, a constant number of students was selected. Strata weights were used in the calculation of national estimates in this report in order to correct for both designed and achieved disproportionate stratification, and school weights were used within strata to compensate for deviations from the requirement of constant numbers of students per school.

The number of respondents in the initial samples were 6260, 6754, 5473 and 5653 for the 1961, 1965, 1970 and 1975 cohorts respectively. The number of respondents in the samples at age 19 were 3433, 2868, 1775 and 3215 respectively. Small fractions of this sample attrition are due to the death of respondents and refusal to participate. In some instances schools did not supply contact information. The greater part of the attrition is due to simple loss of contact as respondents have moved and much of this has been in the gap between initial testing and first follow-up. Year to year retention has often been quite high (over 90%), but even so, over the course of several years the cumulative effect can be large.

Table A1 Probabilities of No Relationship of Year 12 Completion and Educational Participation with Selected Respondent Characteristics

Cohort born in . . .	1961			1965			1970			1975		
At age 19 in . . .	1980			1984			1989			1994		
Level of adjustment . . .	0	1	2	0	1	2	0	1	2	0	1	2
	%	%	%	%	%	%	%	%	%	%	%	%
Panel A: ***Year 12 Completion***												
Gender	0.05	0.04	1.00	0.00	0.08	0.16	0.00	0.07	0.90	0.00	0.00	0.00
Parental Occupation	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00	0.69	0.00	0.00	0.09
Parent's Education	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.09	0.28	0.00	0.00	0.00
Family Wealth	0.00	0.11	0.08	0.00	0.01	0.14	0.00	0.01	0.09	0.00	0.05	0.68
Father's Country of Birth	0.05	0.00	0.59	0.00	0.00	0.00	0.19	0.04	0.70	0.00	0.01	0.08
Rurality	0.00	0.00	0.10	0.00	0.00	0.33	0.00	0.50	0.83	0.00	0.00	0.02
State	0.00	0.00	0.07	0.00	0.10	0.03	0.00	0.09	0.10	0.00	0.00	0.00
School System	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
School Achievement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Panel B: ***Entry to Higher Education from Year 12***												
Gender	0.01	0.00	0.00	0.00	0.00	0.00	0.30	0.97	0.50	0.02	0.01	0.00
Parental Occupation	0.00	0.00	0.04	0.00	0.05	0.75	0.00	0.00	0.69	0.00	0.00	0.00
Parent's Education	0.02	0.14	0.91	0.00	0.00	0.69	0.00	0.00	0.05	0.00	0.00	0.00
Family Wealth	0.02	0.32	0.11	0.00	0.25	0.05	0.00	0.43	0.78	0.00	0.00	0.00
Father's Country of Birth	0.00	0.00	0.00	0.89	0.82	0.92	0.37	0.05	0.11	0.15	0.00	0.00
Rurality	0.00	0.00	0.00	0.00	0.04	0.06	0.04	0.81	0.01	0.00	0.00	0.01
State	0.18	0.10	0.46	0.00	0.00	0.00	0.06	0.01	0.00	0.41	0.54	0.47
School System	0.00	0.02	0.25	0.00	0.03	0.45	0.00	0.00	0.00	0.00	0.00	0.00
School Achievement	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Panel C: ***Higher Education Participation***												
Gender	0.56	0.26	0.00	0.32	0.14	0.00	0.34	0.53	0.08	0.00	0.00	0.00
Parental Occupation	0.00	0.00	0.03	0.00	0.00	0.24	0.00	0.00	0.11	0.00	0.00	0.00
Parent's Education	0.00	0.00	0.76	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.02
Family Wealth	0.00	0.11	0.41	0.00	0.00	0.02	0.00	0.04	0.86	0.00	0.00	0.01
Father's Country of Birth	0.00	0.00	0.00	0.01	0.00	0.17	0.12	0.01	0.32	0.00	0.00	0.00
Rurality	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66	0.09	0.00	0.00	0.00
State	0.03	0.82	0.43	0.01	0.13	0.05	0.67	0.05	0.01	0.00	0.95	0.70
School System	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
School Achievement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A1 Probabilities of No Relationship between Year 12 Completion and Selected Forms of Educational Participation and Selected Respondent Characteristics (Continued)

Cohort born in . . .	1961			1965			1970			1975		
At age 19 in . . .	1980			1984			1989			1994		
Level of adjustment . . .	0	1	2	0	1	2	0	1	2	0	1	2
	%	%	%	%	%	%	%	%	%	%	%	%
Panel D: ***TAFE (Non-Apprenticeship) Participation***												
Gender	0.02	0.02	0.01	0.01	0.00	0.09	0.74	0.22	0.08	0.09	0.06	0.86
Parental Occupation	0.00	0.06	0.12	0.53	0.82	0.97	0.01	0.03	0.17	0.00	0.08	0.09
Parent's Education	0.01	0.02	0.04	0.82	0.39	0.54	0.28	0.30	0.04	0.00	0.00	0.00
Family Wealth	0.02	0.08	0.15	0.02	0.01	0.20	0.40	0.13	0.59	0.03	0.40	0.38
Father's Country of Birth	0.45	0.22	0.28	0.62	0.49	0.73	0.95	0.53	0.42	0.60	0.59	0.55
Rurality	0.04	0.14	0.12	0.06	0.24	0.30	0.57	0.54	0.39	0.01	0.20	0.30
State	0.27	0.49	0.74	0.00	0.01	0.22	0.10	0.54	0.87	0.00	0.01	0.02
School System	0.95	0.22	0.57	0.38	0.59	0.87	0.03	0.02	0.08	0.00	0.36	0.38
School Achievement	0.15	0.03	0.18	0.00	0.11	0.13	0.00	0.00	0.12	0.00	0.00	0.00
Panel E: ***Participation in Apprenticeships (inc. Traineeships)***												
Gender	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parental Occupation	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.07
Parent's Education	0.00	0.03	0.02	0.00	0.01	0.03	0.00	0.04	0.23	0.00	0.05	0.44
Family Wealth	0.00	0.00	0.00	0.02	0.04	0.01	0.01	0.01	0.01	0.00	0.20	0.06
Father's Country of Birth	0.00	0.00	0.23	0.21	0.13	0.55	0.40	0.78	0.30	0.08	0.01	0.19
Rurality	0.10	0.02	0.97	0.02	0.48	0.79	0.00	0.00	0.03	0.00	0.02	0.07
State	0.57	0.46	0.14	0.00	0.01	0.86	0.12	0.02	0.00	0.18	0.19	0.22
School System	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.12	0.00	0.19	0.02
School Achievement	0.00	0.00	0.90	0.00	0.00	0.01	0.00	0.00	0.28	0.00	0.00	0.05
Panel F: ***Post-School Educational Participation***												
Gender	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parental Occupation	0.00	0.00	0.21	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00
Parent's Education	0.00	0.94	0.12	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.04	0.16
Family Wealth	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.86	0.11	0.00	0.00	0.23
Father's Country of Birth	0.88	0.11	0.77	0.00	0.01	0.14	0.01	0.00	0.01	0.03	0.08	0.11
Rurality	0.00	0.00	0.17	0.00	0.10	0.05	0.11	0.23	0.14	0.00	0.50	0.25
State	0.36	0.54	0.98	0.00	0.05	0.15	0.04	0.07	0.31	0.02	0.00	0.00
School System	0.00	0.01	0.21	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01
School Achievement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

The stratification weighting corrects for some of this attrition where it differs between State of schooling, school sector attended, or the school in which the respondent was enrolled. Attrition was generally higher for males and among students of lower achievement. Post-stratification weighting based the year of school completed and gender was employed to further compensate for sample attrition.

Williams (1987) explored the effect of attrition on the 1961 and 1965 cohorts and concluded that 'the data are remarkably robust in the face of sample attrition.' (p. 204). Subsequent parallel analyses (not reproduced here) demonstrate that the size and direction of many key relationships are preserved from year to year despite sample attrition. The weighting procedure is reasonably successful in compensating for the bias.

Sampling Variability

Apart from the possibility of sample bias, our estimates are also subject to sampling variability. This is a necessary consequence of using values from a sample to estimate population values. Sampling variability is often measurable -- certainly formulae exist for simple random samples. Our samples, however, are not simple random samples -- they are stratified cluster samples with selection of clusters based on probability proportional to size. The resultant standard errors of measurement are often substantially larger than for a corresponding simple random sample. The increase in the size of the standard errors follows because students selected in schools are likely to be more similar to each other than to students in other schools -- a result of the social processes that determine geographic stratification and the selective nature of enrolment in non-government schools.

The increase in the size of the standard errors of estimates in a cluster sample compared with a simple random sample of the same size is known as the design effect. Williams (1987: 206) reports quite large design effects for the 1961 and 1965 cohorts (averaging just over 2 for a variety of samples) and these could be expected to hold for the two more recent cohorts. The design effects discussed by Williams, however, are for univariate estimates. The design effects of most relevance to the tables in this report (and to those presented by Williams) are for bivariate and multivariate estimates. These design effects should be expected to be substantially smaller -- although the socio-economic profile of students may vary substantially between schools, the relationship between socio-economic status and Year 12 completion (for instance) will not show as much variation. Hence the importance of design effects (when discussed at all) is often over-stated.

When we have discussed results in the substantive chapters of this report, we have often referred to the values in Table A1. These values are the probabilities of no relationship between each of the several forms of post-compulsory education discussed in this report and the various personal, family and educational background variables. Generally we have taken values of 0.05 or less as indicating the existence of a relationship in the population.

Table A2 Adjusted R-square and Statistical Significance for the Ordinary Least Squares Models Underlying the Analyses

Cohort born in . . .	1961		1965		1970		1975	
At age 19 in . . .	1980		1984		1989		1994	
Level of adjustment . . .	1	2	1	2	1	2	1	2
	%	%	%	%	%	%	%	%
Year 12 Completion								
Adjusted R-square	0.11	0.37	0.14	0.37	0.09	0.34	0.10	0.26
p	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Entry to Higher Education								
Adjusted R-square	0.09	0.32	0.10	0.34	0.08	0.30	0.14	0.39
p	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Participation in Higher Edn								
Adjusted R-square	0.09	0.33	0.13	0.36	0.11	0.38	0.16	0.42
p	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TAFE Participation								
Adjusted R-square	0.01	0.02	0.01	0.02	0.01	0.03	0.02	0.06
p	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00
Apprenticeship Particip'n								
Adjusted R-square	0.17	0.30	0.17	0.37	0.11	0.17	0.09	0.15
p	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Part'n in Post-school Edn								
Adjusted R-square	0.10	0.21	0.09	0.22	0.07	0.13	0.07	0.16
p	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

The values in Table A1 are a little unusual for several reasons. To begin with, they are for the relationship of a set of dummy variables that constitute a variable rather than for each dummy variable (or category of the variable) separately. The latter is the approach more usually adopted, whether it be for OLS, probit or logistic regression. We felt that it was more important to know whether the relationship of one variable as a whole to a given form of participation was significant than whether particular categories of a variable might have been. This approach was motivated by two considerations -- first the difficulties created by the arbitrary nature of the choice of an omitted category for comparison, and second the literature around contrasts in the analysis of variance epitomised by Tukey's concept of honestly significant differences.

Accordingly the values in Table A1 are derived from partial F ratios calculated for OLS equations. The comparisons are based on whether the variance added to a particular

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equation by the inclusion of a set of dummy variables representing a particular substantive variable was significant or not. Such comparisons were undertaken in the context of the zero-order model and the models corresponding to adjustments 1 and 2.

The calculation of the partial F-ratios that underlie Table A1 assumed a simple random sample. We noted above that our four cohorts were not simple random samples, but stratified cluster samples with greater sampling variability than a simple random sample of the same size. Hence the probabilities in Table A1 are likely to be somewhat smaller than the real probabilities (this leads us to err on the side of declaring relationships to be statistically significant). As suggest above, however, the size of this error is often overstated for the results we are reporting and is likely to be quite modest.

There is a compensating effect -- estimates for our models were calculated using pairwise deletion and hence were based on more cases than the models in Table A1 that used listwise deletion. This will lead the probabilities in Table A1 to be somewhat larger than the real possibilities.

It is not a comfort when researchers rely on compensating errors to suggest that the resulting estimates are probably reasonably accurate. We do not. Both sets of errors are at most modest, and their compensating nature simply reduces their effect even further. The values in Table A1 provide reasonable (but not perfect) guidance on the issue of the statistical significance of our estimates.

The Models

Figure 10 sketches the model that underlies the two sets of adjusted values. As we have discussed above, the adjusted values are calculated from ordinary least squares regression equations. Table A2 shows two statistics for these equations. The adjusted R-square shows the proportion of variance explained by the models and the p value is the probability of no relationship.

Notes to Tables

(a) *Year 12 completion* is reported completion of Year 12 by age 19 years.

Entry to higher education is the enrolment by age 19 at a university or college of advanced education of Year 12 completers in October of any year.

Higher education participation is enrolment by age 19 at a university or college of advanced education in October of any year.

TAFE (non-apprenticeship) participation is enrolment by age 19 in a course (apart from an apprenticeship or traineeship) at a TAFE college in October of any year.

Participation in apprenticeships (inc. traineeships) is enrolment by age 19 in an apprenticeship or traineeship in October of any year.

Post-school educational participation is the participation in higher education, TAFE, an apprenticeship or traineeship, or some other form of education or training, by age 19 in October of any year.

(b) Participation rates are for persons who participated in the form of education up to and including age 19. A respondent who participated in an apprenticeship at age 18 will be recorded as having participated in an apprenticeship, for instance, regardless of whether he or she was still enrolled at age 19.

(c) *Gender* is derived from self-reports in answer to the question 'Are you a boy or a girl?'.

Parent's occupation is based on father's occupation. If information for father's occupation was missing, then mother's occupation was used. The six categories used are a condensation of the ANU-2 occupational prestige scale.
Parent's education is based on mother's highest level of education. If information for mother's education was missing, father's education was substituted.

Family wealth is based on a factor scale derived from respondents' reports on the nature of their accommodation and on the possession of certain consumer durables. The scale was then divided into quartiles and the middle two quartiles combined.

Ethnicity is based on father's country of birth.

Rurality is measured by the population density of the local government area in which the school of the respondent was located at the time of first contact -- age 14 for the 1961 and 1975 cohorts and age 10 for the 1965 and 1970 cohorts. The distribution of densities was divided into quartiles with low population densities being defined as 'rural' and high population densities as 'urban'.

Achievement was measured by standardised tests administered at age 14 (1961 and 1975 cohorts) and at age 10 (1965 and 1970 cohorts).

School system refers to the type of school attended when the respondent was age 14.

(d) *Level of adjustment 0* refers to observed rates and percentages which are shown in bold.

(e) *Level of adjustment 1* refers to rates adjusted for differences due to gender, parent's occupation, parent's education, family wealth, ethnicity, rurality, State/Territory and grade at school.

(f) *Level of adjustment 2* refers to rates adjusted for all those variables used in adjustment '1' plus school system, school achievement, self-concept of ability and post-school expectations.

(g) The sample sizes for the 1961, 1965, 1970 and 1975 cohorts are 3433, 2868, 1775 and 3215 respectively. The extent of missing data is the difference between these totals and the sum of the sample sizes shown for any given cohort.

(h) Probabilities of no relationship are presented in Table A1.

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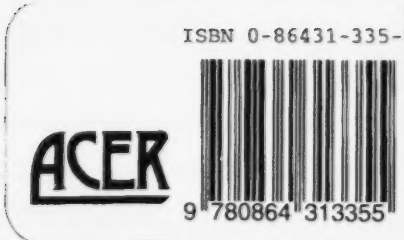

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